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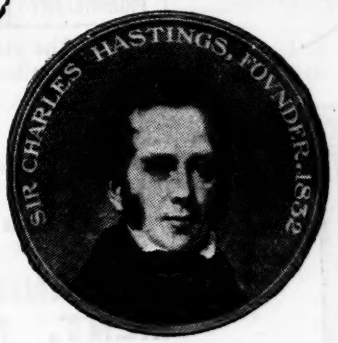

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A British Medical Association Lecture

ON

THE TREATMENT OF FRACTURES.*

BY

S. ALWYN SMITH, O.B.E., D.S.O., CH.M.EDIN., F.R.C.S.EDIN.,

SURGEON, ROYAL HAMADRYAD SEAMEN'S HOSPITAL AND PRINCE OF WALES HOSPITAL, CARDIFF; CONSULTING SURGEON, MINISTRY OF PENSIONS, WELSH REGION.

PRIOR to the war, of the three schools of thought as to the treatment of fractures each had adherents, but the school which advised and practised operative fixation appeared to be gaining favour at the expense of the less spectacular treatments of conservative immobilization and mobilization with massage. In certain cases results by either method left much to be desired.

The diversity of opinion, and ofttimes the poor results, led the British Medical Association to appoint a committee to report on the merits and demerits of treatment by operation or by splinting.[1] One of the conclusions reached by this committee was as follows:

"For surgeons and practitioners who are unable to avail themselves of the operative method the non-operative procedures are likely to remain for some time yet the more safe and serviceable."

This conclusion obviously favoured the operative method, and the general practitioner was left in doubt whether he was justified in treating his own fractures or whether he was to hand them over to the surgeon at the nearest hospital.

During the war most members of the profession had ample opportunity of treating compound fractures, or at any rate of seeing the results of such cases treated by conservative means where this treatment was standardized according to the ideas of the Liverpool orthopaedic school, with modifications such as are exemplified by the work of Pearson, Sinclair, and others. Conservative treatment by splinting has thus again come into its own purely on account of the excellent results gained by standardized methods in thousands of gunshot compound fractures obviously unsuitable for operative fixation of fragments.

In the early days of the war some surgeons tried the effect of plating septic compound fractures, in the hope that the good effect of immobilization of the broken ends would outweigh the ill effects of interference and the inclusion of foreign material. This effort was short-lived, and rightly so, as the results were universally bad.

I mention the various methods of treatment in order to emphasize the fact that in treating fractures in civil life, which are for the most part simple fractures, we should not be hidebound adherents of a single method. Where our experience tells us that we cannot get a good functional result by splinting alone we should be prepared to operate, provided we have experience in that method also. The main essential is that, following general principles guiding treatment, we shall pay the strictest attention to detail in whatever method we adopt. I was closely associated with Sir Robert Jones for seven years, and am imbued with his principles and follow his methods, therefore I am biassed towards conservatism in treatment. The advent of radiography has educated the profession as to the shortcomings of accurate fragmental apposition in conservatism, but in addition it has falsely educated the laity. Patients see their *x*-ray plates showing firmly united fractures in good alignment, with good functional result, but because the fragments are not meticulously apposed they deem themselves the victims of malpraxis, and strained relations may ensue. The public will in time, no doubt, become educated to the axiom that it is not possible to either guarantee accurate anatomical reposition by mechanical means or perfect function by operative methods.

The principles laid down by H. O. Thomas and Sir Robert Jones in the mechanical treatment of fractures are important and have a direct bearing on successful outcome.

1. *A fracture is a potential deformity and must be regarded as such.* By treatment the potentiality must be prevented from becoming a reality.

2. *Strong, steady, fixed extension, with corresponding counter-extension is required as distinguished from forcible intermittent pull succeeded by a period of muscular relaxation.* This principle is applicable more especially to fractures of the lower extremity, particularly the shaft of the femur. It is held that a steady traction through a Thomas bed splint, with the counter-extension of the ring of the splint against the tuber ischii, is preferable to the inclined bed and weight-and-pulley method. The latter, though theoretically constant in pull, is practically intermittent when the patient moves up and down the bed, on account of the friction of the limb against the subjacent mattress.

3. *Correct alignment in conjunction with obliteration of shortening.* A reduction which is incomplete at the primary operation can easily be made complete within the next few days by merely continuing and increasing the extension. The correction is brought about by fixed extension combined with appropriately fixed pads to overcome lateral deviation. This combination may also require the lower end of the fragment to be approximated to the upper by altering the position of the limb.

4. *Avoid rigid circular compression which tends to produce ischaemia.* In this regard the use of plaster-of-Paris as a primary dressing is dangerous except in the hands of experts. Splints should be shaped to the contour of the limb. Concavo-convex metal splints are the most favoured. They can be bent or twisted at will to produce the desired effect. They must be of greater width than the limb to be immobilized so that the circulation shall not be impeded.

5. *Union may be delayed; this is sometimes unavoidable, but there is a vast difference between delayed union and non-union.* When union is slow, it is of great importance to leave the limb alone and not repeatedly to move the fragments to see how things are progressing. Thomas laid down the rule that the rest must be prolonged and absolute. Idle curiosity may be instrumental in converting a delayed union into a non-union.

6. *Union of a fracture does not imply its consolidation.* Bones which appear firm on palpation or manual pressure will, after many weeks, yield to the body weight.

MAL-UNION AND NON-UNION.

Both mal-union and non-union are common occurrences and are often related. Angular deformities should not occur; even if we cannot produce an end-to-end apposition by traction and splinting there should be no difficulty in securing correct alignment. This is of great importance in the lower limb.

The Commonest Types of Mal-union.

In fractures of the neck of the femur the angle between neck and shaft is reduced and a condition of coxa vara results. Where the fracture is in the upper third of the shaft the upper fragment is abducted, the lower fragment pulled up to the inner side of the upper one, and a shortened bowed femur results. In fractures of the middle of the shaft there is a concavity forwards instead of the normal convexity, and genu recurvatum is afterwards found to be present. The same thing happens where the injury is in the lower fourth of the shaft. Here the upper end of the lower fragment lies behind the lower end of the upper one, and the lower fragment may even point almost directly backwards.

FIG. 1.—High bow leg after fracture of the upper third of the femur.

Fractures in the upper third of the leg may lead to a high bow leg (Fig. 1). Fractures of the middle third may result in knock-knee with either inversion or eversion of the foot, and fractures of the lower third of both bones generally end with a valgoid deformity of the foot with an internal rotation. The deformity of a malunited Pott's fracture is familiar to us all, and it is very often a shock to the surgeon who treated the case, as the deformity may arise after the patient has left his care.

Deviation from correct alignment means, in accordance with Wolff's law, alteration in structures—that is to say,

*Delivered before the East Hertfordshire Division, December 15th, 1920.

the internal architecture of the bone changes in response to new forces of strain and muscular stress that the bone itself is called upon to stand. It also means that aberrant forces are thrown on to the joints above and below, and this, combined with deviated lines of muscle pull, will result in chronic pain and discomfort, and traumatic arthritis may result. This traumatic arthritis may be the forerunner of hypertrophic rheumatoid changes in the involved joints.

Even end-to-end apposition of fragments may result in malunion where slight lateral or antero-posterior deviation causes faulty deflection of body weight.

THE COMMONEST CAUSES OF MALUNION.

1. *Being too Sparing with Traction.*

It is useless to be ladylike with a fracture in a strong muscular man, especially of femur or tibia. Traction with a pulley should be begun before the splint is applied, and we should not be satisfied until the affected side is of equal length with the other, even if continued and ever-increasing traction in the splint for a few days is found to be necessary. If the bones are of equal length there cannot be much overlap and no lateral deviation. In recent fractures of the lower extremity pulleys are rarely needed except in the very muscular. Preliminary traction by means of a roller towel clove-hitched round the limb, counter-extension being obtained by another roller towel round the perineum and fixed to the leg of the table at the head end, is generally sufficient. In cases of older standing, not firmly united, a three-ply or five-ply pulley may be requisitioned. Here the counter-extension must be of stronger material. To prepare for such cases ring bolts should be let into the wall at each end of the operating room at a height of about 3 ft. Where union is complete an oblique osteotomy is performed at the site of malunion, and I am accustomed to get primary extension by means of a steel drill through the lower end of the involved bone, sterilized steel wires are attached to it, and the other ends are looped through the pulley hook.

It is surprising what strain can be obtained by this means, and I have successfully reduced a shortening of 3 in. at one sitting without damage to soft parts where the fracture was of six months' standing.

2. *Inefficient Splinting.*

The splint should allow continuous extension in the correct line for the obviation of deformity, and it should control the joint above and below the fracture. Where bones are naturally curved, as the shaft of the tibia, this curve must be imitated in fractures of both bones of the leg by laterally pulling bandages and pads. If the leg is set absolutely straight, an everted ankle and a strained internal lateral ligament of the knee will result when the patient begins to walk.

3. *The Effect of Allowing Body Weight to Fall on Recovering Bone too soon.*

An apparently sound bone may bend when the patient begins to walk, because steps are not taken to prevent faulty deflection of body weight. Textbooks are too optimistic about the period of time requisite for complete consolidation to take place. This has been shown in a series of fractured femora measured at subsequent dates after the patient had been allowed to walk. In each case a certain amount of telescoping had occurred. It is also a fact that one can frequently refracture a bone by manual manipulation after eight to twelve weeks.

For the prevention of deformity during the period of after-treatment it is necessary to take a large amount of weight-bearing strain from the fracture. It is a good working rule to fit all fractures of the femur with walking callipers for at least eight weeks after the bone is considered sound enough to let the patient up. Corresponding fractures of the upper third of the tibia should be similarly treated. Patients who have had fractures of the middle and lower thirds of both bones and Pott's fractures should be allowed to walk with a light outside iron extending from the heel of the boot to two inches below the knee-joint, and the inner side of the sole and heel of the boot should be built up a third of an inch in order to prevent the valgoid deformity that is otherwise so apt to manifest itself.

NON-UNION.

Some fractures are slower than others in beginning to unite, and here the surgeon must possess his soul in patience and leave the fracture alone. Too much interference in the way of constantly taking splints off and moving the fragments to see if union is occurring is apt to end in non-union.

Treatment by what Thomas called damming and hammering is of assistance. Passive congestion by means of rubber tubes tied above and below the fracture, sufficiently tightly to impede venous return, should be carried out for increasing periods of time every day until two to three hours is borne without undue discomfort. The ends are hammered by a small leather-covered wooden mallet twice a week to produce subperiosteal stimulation, and thus acts in the same way as the method of rubbing the ununited ends of the bone. Where non-union is definitely established, and where conservative means as outlined above have failed, the question of operation arises. In fractures of the lower extremity operation should be postponed until the effect of the patient getting about with the aid of an appliance has been tried without success. The number of stubborn non-unions that respond to this simple procedure is surprising. The need for operation having arisen, the question whether this should consist of freshening the fractured ends and bone-plating or bone-grafting is one which depends on personal choice. For myself I invariably use a bone graft; it is preferable to get the graft from the tibia rather than to use a slide inlay of the involved bone, as this is invariably porosed as a result of prolonged disuse. Plating is obviously preferable to wiring for immobilizing the freshened ends where bone-grafting is not resorted to, but a circular wire loop is often of advantage where the non-union is merely due to the interposition of muscle or fascia.

If comminuted fractures appear to require operative interference, it is advisable to leave all splintered bone in position, even in the presence of sepsis. This was impressed on us all during the war. The wholesale removal of bone fragments is apt to result in non-union.

The Signs of Faulty and Delayed Union.

If there be pain over the site of a fracture of old standing, especially on digital pressure, unsound union may be suspected, and if this pain be accompanied by an exuberant callus formation the diagnosis is absolute. If malunion be present in addition, manual manipulation with the aid of a wedge will be sufficient to correct the deformity, and the irritation so caused may expedite firm union; congestion and hammering may also be used with advantage.

Operation or Splinting.

The question what fractures should be treated at once by operation, and which by splinting, must be answered by each individual surgeon according to his mechanical or operative aptitude.

I generally operate on spiral fractures of the lower third of the leg by means of inlay grafts, but plating is equally satisfactory in skilled hands. Fractures of the patella in the transverse axis I treat by wiring, as also fractures of the olecranon, where there is a large gap with rotation of the fragment. I also operate on scaphoid fractures where the proximal fragment prevents full hyper-extension of the wrist and where there is palmar dislocation of the semilunar. Removal of the proximal portion of the scaphoid is generally sufficient.

All other fractures I endeavour to treat by means of splinting or posture, or both, combined in some cases with rigid extension and counter-extension.

FRACTURES OF THE LOWER EXTREMITY.

Fractures of the neck of the femur and of the upper fourth of the shaft are best treated in the double Thomas frame with extension straps on both legs, the affected limb being widely abducted. The groin strap round the groin on the sound side gives adequate counter-extension (Fig. 2).

The exception is in cases of old people, where prolonged recumbency is contraindicated on account of the risk of pulmonary congestion. One must judge by general appearances; the plethoric type of old age fares badly on a

frame. In these cases it is advisable to fit a walking calliper made half an inch too long and allow the patient up on crutches. The American school uses a plaster spica in wide abduction — the so-called Whitman position—instead of the Thomas frame.

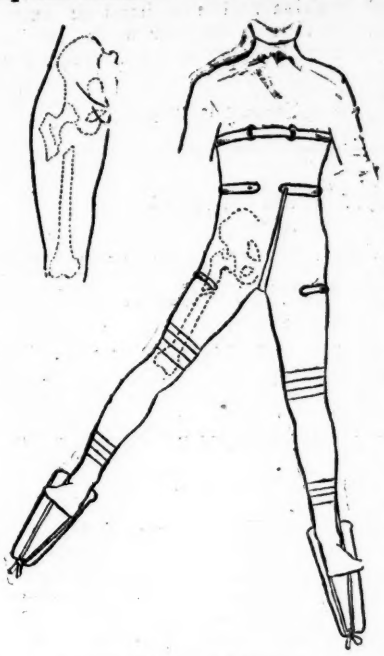

FIG. 2.—Double Thomas's frame for abduction of the affected limb in fracture of the neck and upper fourth of the femur.

The question of separating impacted fractures of the neck depends on the amount of deformity: unless there is extreme rotation outwards of the whole leg the condition is best left alone in old people.

Careful nursing is essential in cases treated on a frame; the back must be carefully rubbed with talcum powder twice daily, the flat of the hand being carefully interposed between the skin of the back and the pad of the frame. An alcohol rub twice weekly is also necessary. With these rules strictly obeyed no skin trouble need be feared.

Fractures of the middle and lower portions of the shaft of the femur, fractures of condyles, and fractures of tibial tuberosities and shaft in the upper three-fourths, are all treated in the Thomas knee-bed splint. I have heard it said by men who are not conversant with this splint that pressure sores are common with it, and for that reason they carry on with the long Liston splint. With proper nursing precautions pressure sores under the ring of the splint should be unknown, despite the tremendous pressure to which the skin in the region of the tuber ischii is subjected when heavy traction is required. Here again the skin round and under the ring must be carefully rubbed with talcum several times a day; the patient usually does it himself under supervision; rubbings with alcohol are also required to harden the skin. The skin in the region is so movable, that a fresh area can be subjected to pressure by merely pulling or pushing it under the ring; the same effect can be produced by slightly altering the position of the limb into various degrees of flexion, abduction, and adduction. Where it is difficult during the first two or three days to reduce the shortening of the limb (the dangerous period for pressure necrosis of the skin under the ring), it is advisable to tilt the foot of the bed, and fasten the lower end of the splint to the lower bars of the bed. The body weight thus keeps up and tends to increase traction, and at the same time reduces pressure on the skin of the buttock.

I use adhesive straps made of coarse holland, which I find last longer than Sinclair's glue, and I do not bend the splint either at the knee or at the site of fracture in

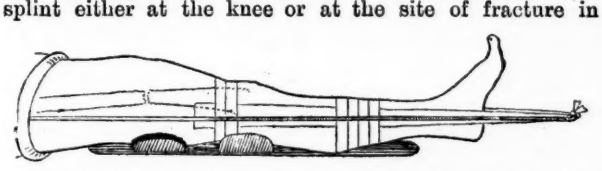

FIG. 3.—Use of malleable iron posterior splint in fracture of the middle third of the femur.

femoral cases. To preserve the antero-posterior convexity of the femur and to prevent hyperextension of the knee I use big pads interposed between the leg and the malleable iron splint which is slung beneath. This fracture-splint should run from a point two inches below the gluteal fold to the lower third of the leg (Fig. 3).

In fractures of the lower third of the femur a big pad is required beneath the site of fracture; if despite firm traction the backward distortion of the lower fragment remains, it may be necessary to divide the tendo Achillis; this, however, is very seldom required. Angulation is prevented by the application of laterally applied bandages fixed to the side bar of the bed-splint.

The use of callipers, ice-tongs and Steinmann's pins to produce traction are complications which are only applicable in hospital and in the hands of experts, and in a large percentage of cases are unnecessary.

Fractures of the tibia, with the exception of Pott's fracture, are treated on the same lines, and fractures involving the knee-joint require adequate restoration of fragments by manual pressure combined with traction. The fragments are easily controlled by a broad ring of adhesive strapping around the leg.

The reduction of a Pott's fracture is of greater importance than the splinting. Forcible traction with the foot in extreme extension combined with a downward pull on the leg and an upward pull on the heel to reduce the backward displacement of the foot should reduce the deformity, but occasionally it is necessary to divide the tendo Achillis. The foot is then forcibly inverted into an over-corrected position. Side-splints of metal extending from the knee-joint, the outer one projecting three inches beyond the heel, are suitably padded to keep up the inversion and bandaged into position. The projecting portion of the outer splint is now bent inwards to meet the inferior extremity of the inner splint. A box is thus formed which, when duly bandaged, keeps the foot at a right angle and prevents the dropping back of the heel. In fractures of the tarsus, when reduction is complete, all that is necessary is for the foot to be kept at a right angle.

FRACTURES OF THE UPPER EXTREMITY.

Fractures of the humerus in the region of the shoulder-joint, if inefficiently treated, may become malunited with, as a result, limitation of abduction and external rotation. Fractures in the region of the elbow-joint are apt to result in defects of flexion and supination. Supination is often deficient in fractures of both bones of the forearm, and the deformity of a malunited Colles's fracture, with limitation of wrist movement, of pronation and supination, and of finger flexion is well known.

Fractures of the anatomical neck of the humerus are best treated by a wrist sling which allows the weight of the arm to act as an extension—a pad in the axilla to produce slight abduction of the upper arm, and an encircling bandage round arm and trunk to fix the humerus.

Separation of the upper humeral epiphysis in childhood or adolescence may produce marked abduction and external rotation of the upper fragment, which, if unreduced, will result in inability to raise the arm above the head. In treating this condition it is advisable to abduct the arm to a right angle and to rotate it outwards till the hand is level with the mouth, and to immobilize the arm in this position either by one of the humerus abduction splints or in plaster (Fig. 4). Sometimes the amount of abduction and rotation are so extreme that it is necessary to fix the arm in plaster above the head in what may be termed the "Kamerad" position.

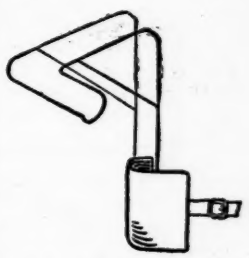

FIG. 4.—Humerus abduction splint.

Fractures of the surgical neck are often impacted, and the question of disimpaction depends on the abduction deformity of the upper extremity. Should it be found necessary, the method of Thomas (Fig. 5) is excellent. The patient is seated on a chair near the wall and a roller towel is passed under the axilla and fastened to a coat-hook or nail. A wrist sling is fastened round the neck and a clove hitch is made fast to the elbow with a long loop which comes to within a foot of the floor and which acts as a stirrup for the operator's foot. Extension is thus obtained, leaving both hands free for manipulation. The axis of the pull is brought to the abducted position, and when reduction appears complete the arm is forced upwards and reimpacted. Treatment is now carried on as for fractures

of the anatomical neck except that a larger axillary pad is indicated.

Fractures of the shaft are treated by malleable iron fracture splints, which can be bent to cover in the shoulder-joint and thus produce fixation.

All fractures in the region of the elbow-joint, with the exception of the olecranon, are treated, after adequate and

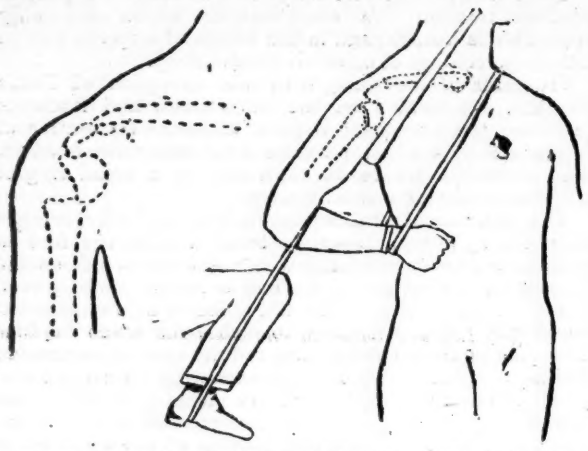

FIG. 5.—Thomas's method for reduction of impaction in fracture of the surgical neck of the humerus.

complete reduction, in the Jones or fully-flexed position. This position cannot be obtained unless reduction is complete. Whether the fracture is supracondylar, T-shaped, or intercondylar, one must reduce by traction-extension, supination, and hyperflexion, and, if the latter cannot be obtained, the routine must be repeated until it is, and the arm must then be kept in this position at rest for at least three to four weeks. A warning must be given against passive movements after the arm is being gradually brought down, otherwise traumatic arthritis and consequent stiffness of the elbow ensues. As an empiricism it is advisable to let the wrist sling down a little every week until the arm is at a right angle at the end of the sixth week. After the fourth week the patient can use the arm in the sling with moderation, and massage may be given as an adjunct to treatment, but forcible passive movement is absolutely contraindicated. For this type of fracture the rectangular internal splint should be abolished.

Fractures of the head and neck of the radius must be fixed in full supination, otherwise limitation of this movement will certainly result. Fractures of the shaft of both bones require consideration of two important points: first, the shaft of the ulna must be kept straight, and secondly, the curve of the radius must be conserved as the

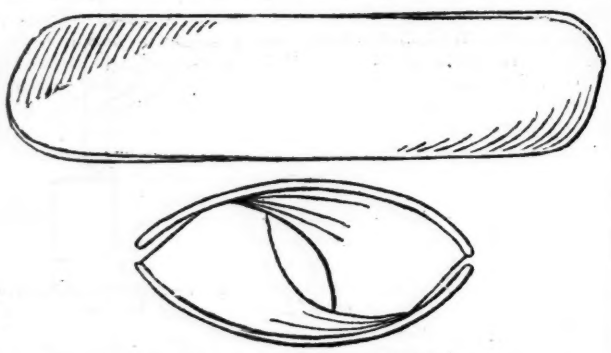

FIG. 6.—Splints twisted for the treatment of Colles's fracture.

whole length of the posterior border of the ulna is straight, and on this the curved radius rotates like a bucket handle. There must be no lateral pressure on the middle of the radius, otherwise synostosis may ensue. In the position of supination the bones are farthest from each other, and so we should treat all our shaft fractures in this position. Nearly all neglected fractures of the forearm show limitation of supination, whereas pronation is not defective.

Colles's fracture requires complete and adequate reduction before splinting takes place. The Jones method is preferable to the hand-shaking plan, because the force is applied directly to the bone instead of working through the carpal bones. Twisted fracture splints (Fig. 6), adequately padded to keep the replaced fragments in an over-corrected position and the hand in ulnar deviation, are applied and remain for four weeks, movements of fingers and thumb being allowed from the first.

REFERENCE.
[1] BRITISH MEDICAL JOURNAL, 1912, ii, p. 1505.

Further Observations
ON
THE ETIOLOGY OF ECLAMPSIA AND THE PRE-ECLAMPTIC STATE.

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THIS paper* contains confirmation of an explanation of eclampsia which one of us published in 1914. It is based on a study, carried out at the Royal Maternity Hospital, Edinburgh, of 40 cases of toxaemia and associated conditions. The original investigations professed to show that the eclamptic and the pre-eclamptic toxaemia is dependent on a placental necrosis and they culminated in the experimental reproduction in animals of a disease closely simulating the classical picture of eclampsia. The first observations were concerned with a study of the pathology and with experiment. We propose now to give a third link of proof—the clinical.

Eclampsia and the pre-eclamptic state of toxaemia are due to the circulation in the mother's blood of a specific substance or specific substances, that have, as their dominating effects, (1) degenerative changes in the kidney and albuminuria, (2) characteristic necrotic lesions in the liver, and (3) convulsions. The symptom-pathological complex is found only in pregnancy, and it is therefore dependent, in some way or other, on the child or placenta or both, and its occurrence in cases of hydatid mole, where there is no foetus, points to the placental elements as the source of the poison.

Placental disease of the nature of infarction is common in eclampsia and pre-eclampsia. In fact, the typical case of long-standing albuminuria of pregnancy shows multiple pale areas of necrosis in the placenta. On the other hand, many cases of fulminating eclampsia show no obvious change in the placenta, and the natural inference for long was that, where infarction is present, it is only of secondary importance. If related to the toxaemic state at all—and related it must be, everyone who has studied the subject admits—it is considered as more the result of the toxaemia than the cause.

What first directed our attention to the subject was the discovery that, although obvious placental disease might be absent in the placenta of fulminating eclampsia, which ends in rapid labour or death, in the other, less virulent type, in which some days or even weeks elapse between the seizure and the birth of the placenta, there is always massive necrosis visible to the naked eye. We have seen no exception to this. Its recognition threw a flood of new light on the subject. It showed that the degenerative change is always present in the placenta, but that it requires some days before it evolves into the form of ordinary naked-eye infarction. As a matter of fact, the recognition of the real character of the change has made it possible of detection at an earlier period if it is looked for.

If these observations are correct they have a double significance. In the first place, they provide us with a tangible focus for the origin of a placental poison. If we except Veit's discarded theory of the deportation of chorionic villi into the blood stream, they offer such a focus for the first time. In the second place, they

*Read before the Section of Obstetrics and Gynaecology of the Royal Society of Medicine.

indicate that, if the necrotic areas are the source of the eclamptic poison, this poison is produced during the early autolysis of the disintegration process, and whilst the structure of the placenta shows no, or only few, visible signs of change. By the time the process has progressed to the stage of ordinary naked-eye infarction the damage has been done.

Gradual piecemeal involvement of the placenta may produce in the end an extensive infarction consisting of small isolated necrotic areas of differing ages and with no symptoms except a toxaemia, which may never at any one time be of a virulent nature, and may, in fact, escape notice. A sudden single massive placental death may, on the other hand, kill before there is even a trace of visible infarction.

At the time of our original investigations in 1914 the idea that products eliminated from the disintegration of tissues at such an early stage could be toxic was a new one in pathology. There were no analogies from other branches of medicine to guide and encourage us. That the impressions formed on the basis of our anatomical studies were, however, well founded was borne out in a very complete degree by the results of our experimental work. We showed that autolysis of the human placenta increased its toxicity to the lower animals, and, moreover, we demonstrated that the early autolytic materials are more toxic than those present later; it seemed as if the early toxic matter was labile, and, if left, became broken up into less noxious elements, perhaps as the result of the continued action of the cell-enzymes. We claimed at that time to have reproduced in the lower animals, by the injection of the early autolytic products of the placenta, a disease exhibiting the classical features of human eclampsia. At that time, as we have said, the conceptions underlying our belief were new in pathology. Since then, however, it has been recognized that similar factors operate in other diseased conditions, and so exactly have these new developments followed the lines laid down in our original investigations that they provide, by analogy, strong proof of our thesis.

We would specially direct attention to the investigations on the origin of shock (Quénu, Delbet, etc.), and more especially to the experimental reproduction of toxaemia by the injection of the products of damaged muscle. Delbet has demonstrated by an extensive and convincing series of experiments that the fission products of muscle are toxic even in the very earliest stages of disintegration. The results have been confirmed by others. A very interesting discovery made during these experiments was that the animal might die immediately or within a short time from an apparent intoxication of the nervous system. On the other hand, it might live for hours or a day or more, and then die from damage to the liver or suprarenal capsules. As Delbet says: "Ces morts retardees sont dues à des altérations du foie et des capsules surrénales." The application of these findings to eclampsia will become apparent in the latter part of this paper.

Our original investigations were arrested by the war. Since they were begun again, during the past year, we have confirmed our anatomical and experimental results. But here we desire more particularly to adduce another and different line of proof based on clinical observations. Before doing so perhaps it will be well to recapitulate briefly our previous observations on the pathology and etiology of placental infarction. Fortunately they are capable of easy demonstration.

Pathology of Infarction.

The pathological changes in an infarcted area of placenta are:

1. *Coagulation* in the intervillous spaces. This, as we shall see, is due to a blockage of the corresponding maternal vessels.

2. *Congestion* of the vessels in the foetal villi. This is early and characteristic. The expansion of the vessels causes a swelling of the villi, which become closely packed together to form a solid block resting against the decidual surface, and sharply differentiated from the surrounding spongy placental substance. This hepatization is not entirely due to the turgescence of the individual villi. It is due also, and probably largely, to the tension of the environing placenta which presses in on an area in which the circulation is arrested. The infarcted block is thus really an area of collapsed placental tissue.

3. *Necrosis.*—During the necrosis the villi undergo disintegration of their cellular elements until in the end they are represented by mere ghost-like outlines. During the process the infarct passes through a series of colour changes. In the beginning it is purple or red, then it becomes chocolate-coloured, then brown, and, with the disappearance of the haemoglobin, the colour eventually of an old infarct is yellow or white. The entire evolution of change requires a considerable number of days.

The naked-eye recognition of infarction is easy when it is fully established; the pale infarct is so distinctive that it forms a prominent feature of the cut section of the placenta. The red or purple infarct is more likely to escape notice as its colour may not differ greatly from the surrounding placenta. Except in the early stages, however, it is solid, and is therefore sharply cut off from the surrounding soft and spongy placenta. In the intermediate stages an infarct may be red in one part and pale in another. In many of the early cases the infarction can only be recognized when the cut section is gently washed with running water. This rinses the intervillous blood out of the healthy parts of the placenta, which become pale, and thus bring into sharp relief the purple blocks of infarcted tissue, in which the blood is clotted and is therefore not removed by the washing.

Etiology of Infarction.

As we have shown in another communication, the underlying factor is an interference with the maternal blood supply. This may be due to simple mechanical factors—for example, *separation of the placenta from the uterus* by trauma or retroplacental bleeding. These are the circumstances that commonly accompany a case of accidental haemorrhage. Another common condition of a somewhat similar nature is placenta praevia, the bearing of which on the questions under discussion will be mentioned later.

In many instances there is no evidence of placental separation or of retroplacental bleeding, and the local impairment of the blood supply that ends in placental necrosis is due to *thrombosis*. We have noted this frequently, and we believe it to be an important cause of infarction.

Accidental Haemorrhage and Toxaemia.

Retroplacental haemorrhage is a common cause of placental degeneration, and it possesses a special interest for us on account of the frequency with which it is associated with toxaemia. The frequency of albuminuria in accidental haemorrhage is given by different authors in figures varying from 30 per cent. to 80 per cent. or over. Our own ratio is nineteen times in a series of twenty-one cases—that is, 90 per cent.

It is often urged that the toxaemia is the cause of the bleeding, and one can see how the discovery of the common association of the two conditions should have given rise to this belief. But we would direct notice to some considerations that bring the validity of the common interpretation under question.

I.

In the first place, accidental haemorrhage is relatively much rarer in primiparae than in multiparae, though toxaemia is specially prone to affect the former.

II.

In the second place, a study of the etiology of accidental haemorrhage shows that a severe strain or other mechanical factor may cause the condition in a woman who was apparently healthy up to that time. The importance of a purely mechanical factor is well brought out by the clinical study of our cases. In 4 out of a series of 21 cases the bleeding followed the performance of such severe exertion as the washing of clothes, or it succeeded an accident, such as falling downstairs. And in all these cases there was albuminuria. In two cases the albuminuria developed after bleeding; the importance of this will emerge later.

In most cases of accidental haemorrhage the bleeding occurs in the site of least resistance—namely, in the displaceable retroplacental area. In other cases, however, the bleeding is widespread, and, coincident with the retro-

placental extravasation, there may be a deep infiltration of the muscular wall of the uterus and of the broad ligaments, a condition which has been called "diffuse uteroplacental apoplexy." In our series there are two cases of this remarkable condition. In the one the extravasation involved the whole uterus and the broad ligaments on both sides. In the other the bleeding was localized chiefly at the right cornu and the adjacent part of the tube and broad ligament. The appearances are exactly those that would be produced by a sudden blockage of the right ovarian vein. The intense and sudden congestion of the uterus which is produced in these cases resembles the change induced in a pedunculated ovarian or fibromyomatous tumour by an acute torsion of its pedicle.

What is the cause of the sudden blockage of the veins in the pelvis that alone can account for a backward pressure sufficient to tear open the vessels of the uterine wall? Is it a thrombosis or a kinking, or is it due to a sudden increase of the intra-abdominal pressure?

III.

A study of the placenta in cases of accidental haemorrhage provides a third series of considerations in support of the theory which we are advocating.

Accidental haemorrhage may be divided into two classes: (*a*) those in which the placenta shows little or no evidence of degeneration, and (*b*) those in which the placenta exhibits degeneration of the detached area or areas.

(*a*) Here sufficient time has not been allowed for the full development of infarction. This category includes cases in which the birth of the placenta follows quickly on the onset of the bleeding, and in it are numbered most cases of external bleeding. Toxaemia is inconspicuous, and if present is represented by a slight transient albuminuria.

(*b*) Here the placenta throughout the detached area shows the signs of early infarction. The placenta has been retained in the uterus for some time, and, whilst the one part of the organ has remained intact and healthy, the other part has become transformed into a mass of degeneration. The degree of hepatization present is dependent on the interval that has elapsed between the local bleeding and the birth of the placenta. This observation is one which we have made so often that we have removed it from the category of the occasional or the accidental. It is invariable.

We have seen one case in which nearly half of the placenta was in a state of early purple infarction. In other cases the bleeding has taken place over small areas —the so-called "retroplacental haematomata"—and the infarcted regions are correspondingly small. Between these two extremes there are all grades in the extent of the retroplacental bleeding, and therefore in the size of the subtending areas of infarction.

Toxaemia is a dominating feature in this class of case. The most severe toxaemias in our series of retroplacental haemorrhage belong to this class. It includes five cases of eclampsia.

IV.

Finally, that the toxaemia is secondary is shown by the fact that we have actually demonstrated that it develops subsequent to the haemorrhage. In two of our cases an examination of the urine within a few hours of the bleeding was negative, whereas at a later examination an albuminuria was revealed. An albuminuria develops so rapidly after the separation of the placenta that it is usually present by the time the patient is admitted to hospital. In many cases, especially of external bleeding, the albumin may never be present except as a trace. It develops early, and in the great majority of instances it passes off early.

It will have become apparent that, if our observations are correct, in order that a toxaemia may develop it is necessary that the placenta must maintain its attachment to one part of the uterine wall. Only otherwise can it receive and pass into the maternal blood the products of the adjacent necrosis. The placenta is like a large bag, in which there is a free circulation of blood, and a necrotic area is thus like a poison-laden mass introduced directly into the maternal vessels.

A recognition of this fact accounts for the well known clinical observation that the toxaemia often ceases with the intrauterine death of the child and the complete separation of the placenta.

A suggestive analogy to the conditions which obtain in placental degeneration is supplied by the observations of Quénu in regard to shock. He showed that the application of a tourniquet to a shattered limb prevented the occurrence of shock by blocking off the source of the disintegration products, whereas the removal of the tourniquet by re-establishing a communication with the systemic circulation was followed by toxaemic symptoms. These observations are comparable to ours—toxaemia from the placenta can only arise and be maintained if and so long as part of the placental circulation persists.

Placenta Praevia and Toxaemia.

It sometimes happens that, in placenta praevia, the detachment of the placenta commences some time before the delivery of the uterine contents. If our thesis be correct such cases should be associated with a toxaemia. We therefore decided to conduct an investigation along these lines.

Albuminuria is the earliest definite sign of a toxaemia that we possess, and in this investigation, as in the similar investigation of cases of accidental haemorrhage, the presence of albumin in the urine was taken as the test. This sign is sufficient, but it is well known that a trace of albumin may be present without any other evidence whatever of a toxic process.

Toxaemia has, so far as we know, never been recognized as bearing any relation to placenta praevia, though a number of cases have been recorded in which low implantation of the placenta was combined with albuminuria. The concurrence has been, however, considered as a chance phenomenon. Recently Jardine and Kennedy reported a series of eleven cases of toxaemia so great as to lead to complete suppression of urine, and in two of these (that is, one in five and a half) there was placenta praevia. These conditions are each so rare that unless there is a possible mutual dependence they should occur together only once in several hundred thousand cases.

For this investigation, as for the similar investigation of the cases of accidental haemorrhage, a catheter specimen of urine was obtained as soon as possible after the admission of the patient to hospital, and also at subsequent intervals thereafter. In all the cases bleeding had commenced before their admission.

Our series consists of 7 cases of placenta praevia. Of these 2 had no albuminuria throughout. In 5 cases albuminuria was found. In 2 it increased from a trace at one examination to a heavy deposit at subsequent examinations. In 1 the albuminuria was absent at the first examinations and only developed later. In 3 of the patients the albuminuria was associated with other evidences of toxaemia, oedema of the face, headache, etc., whilst in one of these cases the toxic symptoms were so great that her condition caused considerable anxiety.

This record is striking, and it is, we believe, a powerful confirmation of the argument we are attempting to prove. The series is, however, too small to warrant any far-reaching conclusions, and we wish to avoid any such temptation. We would rather say that we welcome the opportunity of presenting this evidence, especially because it is of a nature that can be put to a ready test in any obstetric clinic. We shall be glad to hear the results of any others who make similar investigations.

The facts, however, raise a suspicion that in the past the toxaemia which apparently is liable to occur in placenta praevia has been overlooked and has been attributed to the collapse and the anaemia of haemorrhage. We may say that, as a control, we examined two cases of severe *post-partum* haemorrhage at intervals and in each case the urine gave negative findings. The changes in the detached praevia portion of the placenta are exactly those which we have described in the detached placenta of accidental haemorrhage. Where time has been allowed for their development the macroscopic and microscopic features of early infarction are found.

Other Causes of Placental Degeneration and Toxaemia.

In the preceding pages it has been shown that mechanical factors may cause a detachment of the placenta from the uterine wall, and, as in placenta praevia and in some cases of accidental haemorrhage, such a mechanical detachment is the cause of the degeneration that ends in toxaemia.

It often happens, however, that in cases of ordinary infarction of the placenta the exact cause of the impairment of the maternal blood supply is difficult or impossible to discover by an anatomical examination. In some such instances there is a thrombosis in the decidual vessels, and we believe that this factor probably operates in a number of cases. But it is impossible of proof, for one cannot tell from the microscopic appearances whether the thrombosis has preceded or followed the necrosis.

So, in many cases of eclampsia and albuminuria in which definite placental disease is present, the exact origin of the blockage of the maternal vessels may not be evident. We have shown, we believe conclusively, that such a blockage can alone account for the placental changes. How, then, are we to explain it in the absence of such simple factors as are present always in placenta praevia and often in accidental haemorrhage? Do mechanical influences operate in these cases as well?

In this connexion we would again direct attention to one of our cases in which the retroplacental bleeding was associated with a haemorrhage into the uterine wall, the tube, and the broad ligament in a way which we could only explain by invoking a sudden strangulation of the right ovarian vein. In the other case of "diffuse utero-placental apoplexy" the appearances again suggested a mechanical strangulation of the veins, but here of both ovarian and perhaps of the uterine veins as well. The conditions were similar but more extensive.

We have referred to the remarkable and suggestive similarity between uteri showing these evidences of strangulation and an ovarian tumour or a pedunculated fibromyomatous tumour with a twisted pedicle. The conditions are so alike that it is almost impossible to escape the conviction that similar causes are operating.

If there are intra-abdominal influences, perhaps of the form of heightened tension, which can in their extreme form culminate in such a dramatic vascular change, it is almost certain that these same pressure factors act at other times in a less marked degree. It is known that, especially in primiparae, there are evidences of increased intra-abdominal tension—for example, swelling of the feet and legs and distension of the right ureter. Is it possible that similar agencies tend to cause venous stasis? In their extreme form this would result in complete strangulation, whilst in its more mild degree it would result in thrombosis of the veins of the retro-placental area or of the uterine wall.

Localized degeneration in the placenta must be due to blockage of the corresponding vessels. Of this we can be certain, but the ultimate explanation must remain of a theoretical nature until we have a more intimate knowledge of the vascular conditions that obtain in the abdomen and pelvis during pregnancy. Paramore maintains that he has actually demonstrated the existence of a heightened intra-abdominal pressure during pregnancy. We have not had an opportunity of carrying out investigations along these lines, but we have a strong belief that it is by such a research that we shall eventually explain the local necrosis of the placenta which underlies some, if not all, of the toxaemias of the end period of pregnancy.

Sequence of Pathological Changes in Eclampsia: Post-partum Eclampsia.

In eclampsia there are widespread evidences of a toxic process throughout the body of the mother, the most prominent of which are the damage to the kidney and liver and nervous system, and the oedema of the subcutaneous tissues. Whether these diffuse changes occur simultaneously in gradually increasing intensity, or whether they follow a definite sequence in their development, we have so far no means of knowing.

In the majority of cases, where the complex of changes culminates in an eclamptic seizure, the clinical picture is completed before or during labour. In other instances, however, the end stages are only enacted after birth, and the convulsions, coma, etc., develop some hours after the escape of the uterine contents.

Post-partum eclampsia constitutes a difficulty that must be candidly faced by the research worker, and it has long been apparent to us that an understanding of this variant of the disease would probably throw new light on the ultimate nature and origins of the toxaemia. Anomalies are often of greater value than the commonplace features in directing attention to the underlying facts of a disease.

In a preceding communication we tentatively suggested that a piece of dying placenta retained in the uterus might account for the puerperal seizures. This idea we no longer hold, and we are not in a position to offer any other explanation that we can support with proof. We would direct attention, however, to some interesting analogies which may throw some light on the cause of delay in the manifestation of the symptoms in a *post-partum* seizure.

There are not a few toxaemias in which a definite interval is known to exist between the introduction of the poison and the development of the symptoms. In chloroform poisoning the phenomena of toxaemia may not develop for a day or two. But a more interesting analogy is phosphorus poisoning. Here the introduction of a toxic dose may lead to immediate signs of irritation. These pass off, and not till forty-eight hours later do the major evidences of toxaemia develop amongst which convulsions may be present. The analogy between the effects of these chemical poisons and eclampsia is brought home in a striking manner by a study of the tissue changes. In both of the chemical poisons massive damage to the liver occurs, and, in delayed chloroform poisoning, the liver changes may closely simulate those present in eclampsia.

It is impossible to avoid the inference that the immediate cause of the symptoms in such cases is the flooding of the system with the breaking-down products of the liver cells (and perhaps of other organs as well), which were killed at the time of the introduction of the poison, and which in their turn, after a varying but considerable period, generate a new and different poison.

We hold that a conception of this sort is reasonable, and it suggests that eclampsia, as we know it, is possibly not the manifestation of the immediate results of the placental poison, but it is dependent on the flooding of the mother's system with the fission products of the cells of the liver (and perhaps of other organs). It is, as it were, a secondary toxaemia that requires some hours or even days for its culmination. If this explanation be correct, it accounts for the occasional delay of the end stages of the toxaemia till the *post-partum* period.

The analogy of the toxic effects of damaged muscle, which we have referred to on a preceding page, is even more suggestive than that drawn from a study of the chemical poisons. The actual products eliminated from the dying tissues of the leg probably resemble those produced in the placenta. As the researches of Delbet and others show, the lethal result in the former case may be delayed for some time, and the animal eventually succumbs to the effects of the disintegration of the liver and suprarenal glands.

Treatment of Eclampsia and Albuminuria.

There are some suggestions with regard to the treatment of the toxaemias of pregnancy which emerge from this research.

1. Separation of the placenta and retroplacental thrombosis are in some cases, and perhaps in the majority of cases, the factors underlying placental degeneration. Mechanical influences, strain, undue exertion, etc., undoubtedly predispose to these occurrences. Rest should therefore form a cardinal part of the treatment of all such cases. In this way an albuminuria may subside because increasing degeneration of the placenta is avoided.

2. Immediate emptying of the uterus is, theoretically, the ideal line of treatment in severe albuminuria and in eclampsia. It is the ideal method, no matter what theory we adopt regarding their origin, for all are agreed that pregnancy is the ultimate cause. In view of the above theoretical considerations, however, it is possible that when major symptoms develop they owe their origin to a poison introduced into the system some considerable time before, and in the interval the placental danger has subsided or disappeared.

Considerations of this kind would account for the very varied results that follow evacuation of the uterus, and they make logical the attitude adopted by most obstetricians, that severe manipulative measures are apt to stir up the toxaemia to dangerous limits, especially by provoking convulsions, which are readily inaugurated by stimulation of the nervous system.

SUMMARY.

1. Eclampsia and pre-eclamptic toxaemia are due to the products of the early degeneration of a piece of placenta whose blood supply has been interfered with.

2. Infarction of the placenta may be due to mechanical detachment of the organ from the uterine wall—for example, in placenta praevia and in some cases of accidental haemorrhage. In other cases it is due to thrombosis; this is the factor operating in most cases of eclampsia.

3. Where time is allowed for the elaboration of toxic elements from the detached placenta toxaemia develops. In concealed accidental haemorrhage, therefore, toxaemia is conspicuous. Absorption of placental poisons only occurs if and whilst part of the placenta remains attached to the uterine wall.

4. Toxaemia occasionally accompanies placenta praevia for the same reasons.

5. The toxaemia develops after the haemorrhage; it is therefore not the cause of the bleeding in accidental haemorrhage.

6. The major symptoms of eclampsia are probably due to the flooding of the mother's system with the breaking-down products of liver cells (and perhaps of other tissues), which were killed some hours or days previously by the placental poison. Compare the interval that elapses before the development of symptoms in phosphorus poisoning, etc. A consideration of this sort accounts for the occasional occurrence of *post-partum* seizures.

7. Recent investigations on shock (Quénu, Delbet, etc.) support by analogy this conception of eclampsia. These observers have shown that the early disintegration products of muscle are toxic. The injection of these substances into an animal may kill at once. On the other hand, the lethal effect may be delayed for some time, in which case it is due to degeneration of the liver and suprarenal glands. The changes induced in the liver in such a toxaemia resemble those found in the liver in eclampsia.

This investigation was carried out at the instance of the Medical Research Council. It was conducted at the Royal College of Physicians' Laboratory, Edinburgh.

CARDIAC PERISTALSIS AND MITRAL STENOSIS.

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IN an article entitled "Dilatation of the Heart," published in the BRITISH MEDICAL JOURNAL of February 5th, 1921, I showed that the pressure which the cardiac walls can, theoretically, exert on their contents varies inversely as the cube of the diameter of the enclosed chamber. Thus, when a chamber has by contracting reduced its diameter by one-half, its walls could, because of their physical advantages, exert eight times as great a pressure on the enclosed residual contents, and when the diameter has fallen to one-third they could exert twenty-seven times the pressure that was possible at first, the force of contraction being the same throughout.

Not that I imagine that the cardiac walls can fully effect this, as they are not perfect spheres, and they have deficient muscular areas at their valve orifices. They must, however, be physically capable of more or less following the physical laws which govern contracting hollow spheres, and of exerting enormously greater pressures on their residual than their full contents, or, expressed otherwise, of expelling their residual contents with much less effort than their first expelled contents.

The principle to which I am calling attention can be readily appreciated by the purchase of a big rubber air-balloon with thick walls, as sold to children, and of a similar small rubber balloon with thin walls. If these are mounted on a three-way glass tube and air blown in by the free orifice, only the big balloon will dilate; the small thin balloon will resist the air pressure which dilates the large thick one. If, now, the inflated big balloon be clamped off and the small one separately inflated, and both afterwards connected together, the small thin balloon will blow its contents into the large thick-walled one and inflate it further.

I maintain that there are conditions in the working of the heart in which the thin-walled auricle can similarly force its contents into the thick-walled ventricle when the ventricle is contracting against it, and that the appreciation of this fact is essential to understanding much that is observable in cardiology.

It is universally admitted that the auricle begins its contraction before the ventricle. The auricle, therefore, is becoming a small chamber while the ventricle is becoming a large one, through receiving the auricular contents. Towards the end of its contraction the auricle has but a few units of area of blood to contract on, while the ventricle, being full at that time, has many. The auricle also by contraction has thickened, while the full ventricle is at its thinnest. Should the contractions overlap, and the ventricle begin its contraction before the auricle has finished, the supposition of so many writers that the ventricle must in that case overcome the auricle is not evident. In the Bramah press it is not the big piston which overcomes the little one, but the reverse; and the full ventricle is at a greater relative disadvantage than the big Bramah piston, having a minimum of contracting efficiency at the moment when the area of resistance is at its maximum.

Now it is commonly supposed that the contraction of the auricle is over before that of the ventricle begins. This view does not accord with that of many of the most noted earlier observers who specially investigated the subject. Thus Dr. Barclay wrote:[1] "The fibres forming the auricle being intimately associated with those which surround the ventricle, the two cavities do not contract and dilate alternately, but the contraction of the one overlaps to some extent that of the other." He added, however: "When the mitral valve is much altered, the more powerful contraction of the ventricle must overcome that of the auricle if there exists anything like an opposition between them."

Professor Potain, the greatest French authority during the last half-century, maintained that, normally, the closure of the auricular-ventricular valves corresponded in time with the opening of the aortic valves, and that the contraction of the auricle lasted till that closure. Had he been able to conceive that the auricle could oppose the ventricle, if their contractions overlapped, he would not have been forced to place, as he was, the beginning of the ventricular contraction at the moment, or just before, the aortic valves opened.

Professor Potain heard the murmur of mitral stenosis (so-called "pre-systolic") during the apex beat, and, believing it to be due to the auricle, maintained that the ventricular contraction must begin later. Dr. Dickinson heard it also during the apex beat, and maintained that it must therefore be ventricular-systolic in origin. The trouble with these observers was that they could not imagine that the auricle could drive its blood on in spite of the ventricle if their contractions overlapped, whereas I have shown that the chance of the auricle being physically able to do this is greater than the chance of the ventricle being physically able to oppose it, especially when the auricle is hypertrophied.

In the classic investigations made by Professors Roy and Adami[2] graphic tracings are given showing the relation in time of the chief cardiac events. Roy and Adami actually placed tambours in the cardiac chambers so that the various pressure changes could be exactly recorded. The auricular contraction, as given by them, was at its maximum when the apex beat was at its maximum, and had not finished, in normal cases, when the aortic valves opened, thus showing a marked overlapping of the auricular and ventricular contractions.

Moreover, in harmony with this, Roy and Adami found that the papillary muscles did not contract to support the auricular-ventricular valves till the moment when the aortic valves opened. This strongly suggests that some other force was supporting these valves during the first part of the ventricular contraction. That force, fairly obviously, must have been the contracting auricle itself, which I maintain was physically competent to do it.

An overlapping of the systoles is probable *a priori*, for primitive cardiac contraction is peristaltic, and the essence of a peristaltic contraction is that each segment in sequence takes up the contraction and maintains it during the

expulsive period of its successor. In this way the great veins near the auricle contract and close first, and maintain their contraction during the expulsive period of the systole of the auricle. It would require an infinite force to open a fully-contracted vein, so that regurgitation from the auricle is amply prevented. A sphincter is as good as a valve to protect the veins. In birds the mitral valve itself is only a sphincter.

When the auricle contracts, it likewise appears to maintain its contraction, prolonging it into ventricular-systolic time, thus for a period supporting the auricular-ventricular valves. The ventricle also appears to maintain its contraction, as Roy and Adami's curves show, for an appreciable period after the outflow of blood into the aorta, thus for a time supporting the aortic valves.

In the case of mitral stenosis any overlapping of the contraction of the auricle on to that of the ventricle is obviously likely to be increased. It is difficult for the auricle, even if hypertrophied, fully to expel its contents through the stenosed mitral orifice before the advent of the ventricular contraction; and just as the contraction of a ventricle is normally longer than that of an auricle, because of the greater opposition its contraction experiences, so the resistance opposed to the auricle, when the mitral orifice is stenosed, is likely to prolong its contraction, and make it more ventricular in character.

Keyt of Cincinnati, as quoted by Professor Marey[3] maintained that "one of the characteristics of aortic stenosis was the long duration of the ventricular systole." Dr. Hilton Fagge wrote: "If the mitral orifice be stenosed, the contraction of the auricle will be slower than normal, and the beat of the ventricle will thus be delayed." Dr. Galabin and Dr. Mahomed made very similar statements, after examining their graphic curves taken in cases of mitral stenosis. Dr. Sansom[4] wrote: "It is obvious not only that the auricle (in mitral stenosis) contracts in a manner much more powerful and much more prolonged than under normal conditions, but also that it contributes in very marked degree to the general elevation (apex beat) which is completed by the systole of the ventricle." French writers, such as Dr. Constantin Paul, have advanced much the same opinions.

Observers such as these could not follow to a useful conclusion the evidence of their senses, because they believed that the power of the auricle did not count as compared with that of the ventricle, and that any overlapping of their contractions could have no physical utility.

As a matter of fact there is no obvious reason why, if the auricle has contracted to, say, half its diameter, in a case of mitral stenosis, before the contraction of the ventricle opposes it, the auricle should not continue to send on its residual contents into the full ventricle, the aortic valves opening, or the ventricle expanding to receive them. This is rendered the more possible by the fact that the walls of the ventricle, in well marked mitral stenosis, are thinner than normal, while those of the auricle are hypertrophied. I have seen an auricle with walls hypertrophied almost to the thickness of the ventricle. Dr. B. Foster and Dr. Sansom have reported auricles with walls measuring up to 6 mm. in thickness, exceeding, that is, the thickness of the right ventricle.

The ventricle can never exert its potential power of opposing the inflow of the residual blood from the auricle, because directly its contraction has raised the intraventricular blood pressure above that in the aorta its contents escape into the latter, and no further raising of blood pressure on its part is possible. The maximum resistance the auricle could, therefore, ever find opposed to it by the ventricle is determined by the pressure in the aorta, and an auricle towards the end of its contraction, especially if hypertrophied, could, theoretically, being small, exert a sufficient pressure on its residual contents to overcome this. Allen Burns described a case under his observation in which the ventricles became calcified, and the man lived for a long period with the auricles alone doing the whole work of the circulation.

It may be objected that in cases of mitral stenosis the auricle dilates as well as hypertrophies. I believe this to be one of the fictions of medicine. In a paper published in 1898[5] I gave particulars of an analysis I made of all the *post-mortem* reports of Guy's Hospital during the ten years 1886–95. Out of a total of 4,791 necropsies during that period, there occurred 196 cases of stenosis of the mitral orifice. Of these cases, 23 came from the surgical wards, and only one among them appeared to have died of asystole due to the stenosis, which was severe. If this case be excluded dilatation of the left auricle was only observed in 3 of the remaining 22 cases, where death occurred from accident or operation before the heart broke down. Dilatation, therefore, is not a feature of the disease during its course. I doubt if 3 in 22 be materially greater than the average for the heart generally at necropsies. The paper referred to established the fact, so far as statistics could establish it, that the characteristic change in the left auricle in mitral stenosis is hypertrophy, and that dilatation is a break-down phenomenon occurring late in the disease.

Conclusions.

1. There is considerable evidence to show that the contraction of the auricle normally overlaps that of the ventricle, lasting probably till the moment of opening of the aortic valves.
2. That in cases of mitral stenosis this overlapping tends to be still further prolonged, invading therefore the expulsive portion of the ventricular systole.
3. That the ventricle could not prevent the auricle sending its residual blood into it, if their contractions overlapped, because at that time the auricle, being small, would have few units of area of blood to contract on, and a thickened mass of muscle to exert the necessary pressure, whereas the ventricle would be in exactly the reverse position at the time.
4. In cases where the mitral was stenosed the auricle would be further helped by hypertrophy of its walls and thinning of those of the ventricle.
5. That the murmur of mitral stenosis ("presystolic") goes up to and into ventricular-systolic time because the blood flow does likewise.
6. That the murmur is "crescendo" in character because the auricle can exert an ever-increasing pressure on its contents as it contracts. Theoretically the pressure can increase inversely as the cube of the decrease in diameter.
7. That regurgitation through an incompetent mitral orifice is prevented, probably for years, by the contraction of the auricle behind that orifice during the expulsive portion of the ventricular systole.
8. That the presystolic murmur is replaced by a systolic murmur when the auricle cannot decrease its size in time to become a sufficiently small chamber to defeat the oncome of the intraventricular resistance, but on the contrary is defeated by it. This will allow regurgitation, the auricle will speedily dilate, fibrillate, and compensation will break down.
9. Temporary recovery by rest or bleeding will probably mean that the auricle becomes again, for a short time, master of the situation.

References.

[1] *Lancet*, March 16th, 1872. [2] *Practitioner*, vol. 44. [3] *Circulation du sang*, p. 687. [4] *Allbutt's System of Medicine*. [5] BRITISH MEDICAL JOURNAL, February 5th, 1898.

BILHARZIA DISEASE IN EGYPT.

BY

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THE outstanding facts in Drs. Lasbrey and Coleman's article on 1,000 cases of bilharzia treated by antimony tartrate, in the issue of the BRITISH MEDICAL JOURNAL of February 26th, are, as it seems to me—

1. The prevalence of the disease in and around Cairo.
2. The applicability of the treatment of bilharzia—both complicated and uncomplicated cases—by intravenous injections of antimony on a large scale in Egypt; and, most striking of all,
3. That the prestige of the British doctors with the fellaheen of Egypt, at the present period of national unrest, is proof against the prejudice aroused by religious and political mischief makers.

The cases were all voluntary, and, since the completion of this series of 1,000 cases in August, 1920, another 1,000 have been done in five months. The C.M.S. Hospital, Old

Cairo, is by no means the only hospital in Cairo where large numbers of bilharzia cases are coming for treatment; the Kasr-el-Aini Hospital, if my information is correct, has treated about 1,600 cases of bilharzia by the intravenous method during twelve months, and other hospitals and practitioners in Cairo are similarly treating numbers of patients, though naturally on a smaller scale; also the Government hospitals in the provinces, some of which have a still larger number of cases to their credit even than the Kasr-el-Aini, and other hospitals, are carrying out the treatment. The great number treated is striking, but bilharziasis is so deeply rooted and prevalent in Egypt that, in my judgement, hospital treatment alone, even on this large scale, will take a long time to make an impression on it as a national disease; the sources of reinfection, too, are many. It should be remembered, however, that each case, when cured by antimony tartrate, ceases to convey infection, owing to the fact that the ova deposited in the bladder and rectum are also killed by the remedy—in other words, the patient ceases to be a "carrier."

The report of the first 1,000 cases treated at the C.M.S. Hospital, and the lucid description of the simple technique employed, is testimony that antimony tartrate is efficient for dealing with bilharziasis on a large scale, and capable of being applied in Egypt. Antimony tartrate is cheap, the cost of the amount sufficient for the course of treatment for one case is 1s. It is stable, it is easily procurable, it is soluble, and solutions containing it can be sterilized by boiling as often as necessary before use. These facts are all advantageous for working in a sub-tropical country and in out-stations. Antimony tartrate, when given by the veins, is, in all probability, not so toxic to the patient or injurious to the tissues as is generally supposed.

The method of administration is simple of application, but, as Drs. Lasbrey and Coleman's article shows, it needs practice, and, if carried out on a large scale, the arrangements need considerable organization. There are many details of method to attend to. Finally, it is not a remedy to be placed in the hands of the careless and the inexperienced.

Bilharziasis is so prevalent in Egypt, and the sources of reinfection after treatment are so numerous, that this direct method is alone not sufficient for dealing with the disease nationally, and in this connexion there is a trait in the character of the Egyptian which militates against the success of simple hospital treatment. The course of treatment at present lasts at shortest seventeen days, and usually three weeks; it may take a month. The Egyptian fellaheen reserves to himself the right to determine when the cure is completed. When he is free from pain, when his urine looks normal, when the act of micturition is normal, then, according to his standard, he is cured. His decision is made often too early, as the doctor knows from microscopic investigation. However, the patient thinks he is cured, and he goes away and cannot be traced. This happens possibly in one-third of the cases treated in Egypt, and it was found advisable by Drs. Lasbrey and Coleman to let the patients bring their mats and sleeping paraphernalia and to accommodate them in the hospital grounds during the course. The only drawback I know to out-patient treatment is this liability of patients to cease attending before the course is completed; it is a serious one, however, and as patients with bilharzia are very numerous in Egypt, and as it is impossible to treat a whole nation in the wards of a hospital, treatment modified according to circumstances is necessary and advisable. Treat the patients as out-patients, but take the treatment to the villages of the people, would seem to be the solution.

Many of the cases—they are the worst from the point of view of spreading infection—are too mild for the sufferer to bother to see a doctor; others are too bad, and, believing there is no cure, die in their villages. Practically the majority of sufferers will not seek hospital relief of their own accord. Therefore the organization of small mobile out-patient hospitals is needed with mobile laboratory attached, and a staff chiefly or in some instances entirely composed of Egyptians; it would take up a position in or near a village and would, from the Omdar or Sheikh, get a list of sufferers; such a mobile hospital would particularly work through the schools—the young are the chief sufferers.

I am not so optimistic as to believe that a clean sweep of the bilharzia cases in any village would be made in the first instance, or for some years, but if care were taken to send only experienced and careful workers (Egyptian for preference) whose judgement as regards the dose and whose skill in the technique of the operation, and whose care in the preparation of the paraphernalia can be relied on, confidence would be secured and sufferers would come forward voluntarily, and, after a short time, there would be less trouble in applying the injections than there is in doing vaccinations for small-pox. In a short time a travelling hospital, instead of sitting down near a village and treating only a percentage of the sufferers, would be welcomed and would remain until all the bilharzia cases in the vicinity suitable for treatment were dealt with. It would then move on to fresh ground. Cases which were unsuitable for out-patient treatment would be sent to a hospital—no doubt in the car attached to the mobile unit.

But the organization of mobile hospitals, together with the present general hospital treatment, extensive though it is, is in itself not sufficient to deal with so prevalent a disease as bilharzia in Egypt on a national basis.

Leiper's discovery of the life-history of the bilharzia schistosome—its extra-corporeal stages of development in the mollusc (*Bullinus* and *Planorbis* in Egypt)—placed Egypt in possession of information the practical value of which lies in the fact that it can be applied on an economic basis for the purpose of extermination of the mollusc, and so stamping out bilharzia. Without these molluscs bilharzia disease could not exist in Egypt. It is probably impossible to eliminate the molluscs completely, but an advance can be made in two directions in dealing with them. In the first place an attempt may be made to exterminate them, and, in the second, measures may be taken to try and prevent those which cannot be exterminated from becoming infected with bilharzia.

But bilharzia will not be eliminated as a national disease from Egypt by the application of the antimony tartrate remedy, although supplemented by the hygienic measures suggested by Leiper[1] for dealing with the all-important mollusc—sound and thorough though they undoubtedly are. In order to achieve the object in view the co-operation of the natives must also be sought. That they will co-operate in spite of religious prejudices, ignorance and primitive notions, is evidenced by the fact that so many as 1,000 cases of bilharzia in one year at one voluntary hospital and 1,000 at another voluntary hospital in the same town sought the treatment.

The Egyptian mind is receptive; education by lessons at the primary school, by instruction at hospitals, by instruction of the general public by propaganda work, lectures, magic lanterns, advertisement posters, cinematographs—in fact education by publicity is what it needs.

It must not be thought that nothing is now being done by the medical authorities in Egypt. The Egyptian Sanitary Department is fully alive to the importance of this great question of bilharziasis. It has arranged for treatment to be carried out in the Government hospitals, and is moving in the direction of education of the fellaheen by means of lantern slides and diagrams and lectures. Native unrest possibly has prevented more being done so far.

Conclusion.

In order to eliminate the scourge from Egypt, it might be dealt with systematically on a much larger scale, and steps might now be taken to get rid of it by supplementing the present stationary hospital arrangements—

(1) By working through the country with mobile hospitals with laboratory attached;

(2) By adopting measures for the destruction of molluscs, and for preventing those which cannot be destroyed becoming infected;

(3) By education of the fellaheen in the causes, prevention, and cure of the disease, and acquainting them with the life-history of the parasite by means of lantern slides, pictures, posters, lectures, cinematographs. The mobile hospitals would with advantage have a cinematograph attached, and the three great helminthic diseases of Egypt—*Hymenolepis nana*, ankylostomiasis, and bilharziasis—"featured." There is no reason why the cinematograph should not be used in this important medical educational work, with very great advantage to Egypt.

Reference.

[1] *Journal of the Royal Army Medical Corps*, 1915, vol. ii.

FIVE HUNDRED CASES OF MALARIA IN PENSIONERS.

BY

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DURING the latter half of 1919 a very great number of demobilized and discharged soldiers appeared before the various pensions' boards throughout the United Kingdom, claiming for disabilities incurred during service in the late war.

The following table gives the correct figures for the months of October, November and December, 1919:

	Oct., 1919.	Nov., 1919.	Dec., 1919.	Total for 3 months.	Per-centage.
Total malarial cases ...	5,626	6,702	6,972	19,300	7.7
Total number of cases ...	77,308	86,461	84,518	248,217	100
Total wounds and injuries cases	24864	29,826	29,418	84,108	33.8
Total diseases cases ...	52,444	56,635	55,100	164,179	66.2

These numbers comprise all those men who have appeared before the pensions' boards during these three months. Of the total, 33.8 per cent. were claiming a pension for wounds and injuries, and the remaining 66.2 per cent. for various diseases. The malarial cases examined during this period were 19,300, or 7.7 per cent. of the total number of cases seen—that is, 1 in every 13 cases. Comparing the malarial cases with other diseases, the percentage is 11.6, or 1 in every 9 cases. Since obtaining these figures the proportion of malarial cases seen has increased.

From the United Kingdom 5,704,416 men were sent overseas, and of these roughly 400,000, or one-fourteenth, served in malarial countries.

Thus it can be realized that malaria has played a big part, not only amongst the casualty diseases during the late war, but is still continuing to cause a large amount of sickness and expense, both through loss of man power and pensioning at the present time. This shows that the incidence of malaria in those serving in countries where the disease is endemic is very high, and that the prognosis as regards complete recovery is bad.

The 500 cases to be described were examined consecutively at the Ministry of Pensions, and comprise 356 men who contracted malaria on the Salonica front, 62 from Egypt and Palestine, 45 from East Africa and 37 from other theatres of war, including a few recurrences of fever contracted during service in India prior to 1914.

I have endeavoured in these cases to compare the three main malarial theatres of war—that is, Salonica, Egypt and Palestine, and East Africa—and to show in what respects their immediate and later effects resemble and differ from each other.

1. *Discharged Medically Unfit.*—The following table gives the totals and the percentages:

	Total.	Percentage.
Salonica	45	12.6
East Africa	13	28.9
Egypt and Palestine	5	8.1
Miscellaneous	6	16.2
Total for all theatres	69	16.4

Thus over 16 per cent. of these collected cases had been discharged permanently unfit. This is a considerable proportion since it does not take into account the large number who have died from the disease. The other feature about the above table is the high percentage, 28.9, of the cases contracted in East Africa.

2. *Length of Service.*—There was also quite a marked difference in the average time spent in the malarial country before the soldier was transferred to a non-malarial theatre of war. The following table shows that the average time spent in East Africa was considerably less than that spent in Salonica and in Egypt and Palestine. It is difficult to account for the difference, but it seems that the length of the lines of communication had a great deal to do with it. This was in a great measure responsible for the difficulties in bringing up supplies, in establishing hospitals with adequate accommodation and necessary comforts, and in setting up ordnance depôts where the men could be provided with fresh boots and clothing to replace those worn out or lost on the campaign.

Theatre of War.	Average Times in Months.
Salonica	... 24.23
East Africa	... 14.15
Egypt and Palestine	... 24.37

In all these three theatres of war, malignant tertian fever was common. Unfortunately, I was only able to get a record of the type of infection in a very limited number of cases. All these cases were sent for blood examination at the time of being boarded, but were in every case negative, save in two in which benign tertian trophozoites were found.

3. *Seasonal Prevalence.*—An examination of the seasonal prevalence on the three malarial fronts also showed certain differences.

In Salonica the malarial incidence rose in June and continued high through the summer months, reaching its maximum in September. October showed a slight decline, and the minimum was reached in January. In Palestine and Egypt the number of malarial cases rose in July, continued through the summer months, reached its maximum in October and November, and then dropped rapidly, reaching its minimum in March. In East Africa the seasonal prevalence was not marked, and showed only slight increases in January, March, April, and June.

The following table gives the numbers and percentages found:

	Salonica.		Palestine and Egypt.		East Africa.	
	No.	Per cent.	No.	Per cent.	No.	Per cent.
May	18	6.1	2	3.7	3	7.7
June	42	14.3	3	5.6	5	12.8
July	33	11.2	7	12.9	3	7.7
August	43	14.6	6	11.1	3	7.7
September ...	58	19.7	7	12.9	3	7.7
October ...	36	12.2	12	22.2	3	7.7
November ...	23	7.7	11	20.4	2	5.1
December ...	8	2.7	2	3.7	2	5.1
January ...	2	0.7	1	1.4	4	10.3
February ...	6	2.0	1	1.4	2	5.1
March	12	4.0	0	0	4	10.3
April	13	4.8	2	3.7	5	12.8

The following suggestions are put forward to account in some measure for the seasonal differences.

1. *Climatic.*—Salonica, Egypt, and Palestine are non-tropical countries, and as such undergo marked variations in external temperature, depending on the time of year. In Salonica especially the winters are severe, and in Palestine and even Egypt the differences between the winter and summer temperatures are quite marked. East Africa, on the other hand, is tropical, the equator passing through British East Africa, and the theatre of war being situated directly south of this. For this reason there is very little difference in the winter and summer temperatures, and any coolness is dependent on the rains. These occur in the various parts of the country at different times of year. Thus, in the interior plains, the rains commence about October. In the highland plateau they are later, not appearing till December and lasting till the middle of April. On the coast the rains commence about June. Now, just as a certain temperature is essential for the breeding of mosquitos, so also is an adequate amount of water necessary for the depositing of the eggs. During the dry months the heat of the sun tends to dry up all collections of water, so preventing the eggs hatching. Also, the heavy rains are apt to wash away and destroy deposits of eggs, so that the mosquito has to wait till the end of the rainy season, when there is a plentiful supply of suitable water, before its eggs can be hatched out to the

best advantage. For this reason the seasonal prevalence of malaria alters for the various parts of the country, depending on the time of the rains.

2. *Conditional.*—By this is meant the alterations of service conditions in the increasing or mitigating the contraction of the disease. This especially applied to Palestine, where the rapid advance into the highly malarious country of the Jordan Valley in the summer of 1918, accounted for a very great number of the total malarial cases. Unlike Salonica, Egypt and Palestine were not wholly malarious; and in Palestine, where the majority of cases occurred, the incidence seemed to depend on the movements of the troops from a camp where antimosquito measures had been effectively taken into a fresh unprotected and more highly malarious district.

Salonica itself is a highly malarious country, notably the Struma Valley, where many miles of marsh land render satisfactory antimalarial measures quite impossible owing to the enormity of the task. Another factor was that in this theatre of war the campaign was less progressive, so that the incidence depended for the most part on the climatic conditions. This is indicated in the following table, showing the number of cases and the percentages contracted on the three fronts during 1915 to 1919 inclusive. It will be noticed that the years 1916 and 1917 show the highest malarial incidence, which declined markedly in 1918. During the autumn of 1915 a few troops only were disembarked at Salonica, and no serious operations were attempted that year. The year 1916 shows increased activity. Large numbers of reinforcements arrived, and an advance was made into the Struma Valley. In this highly malarious part, the incidence during the summer and autumn months was very high. In 1917, more reinforcements arrived, and the advance, which had been held up for more than a year, recommenced. Monastir was recaptured, and fresh malarial country opened up. This year showed the maximum incidence. The incidence declined in 1918, when sanitary measures began to prevail, and more suitable country was occupied by the troops.

In East Africa the real offensive commenced with the arrival of General Smuts in the spring of 1916, and by the autumn of that same year the whole of German East Africa north of the central railway running from Dar-es-Salaam to Ujiji was freed from enemy forces. This part, though malarious, was not so highly infected as further south, where the next stage of the campaign was fought. This fresh country became the seat of operations in 1917, and the climatic conditions here, especially during the rains, could easily account for the marked increase of malarial cases. In fact, the climatic conditions were considered so deleterious that practically all European troops were replaced by Indian and East African native troops. This is probably the reason of the decrease in number for 1918, as only men from the British Isles are noted in these cases.

Palestine shows the most interesting figures. In 1916 the troops were advancing towards El Arish, in 1917 they were hung up before Gaza, and only in 1918 was made the big advance ending with the capture of Jerusalem and Damascus. It is generally observed that even in highly malarious countries stationary camps in time become fairly healthy, as modern sanitary methods have been found most efficient in combating the anopheles; stagnant water is either got rid of or treated, proper mosquito-proof beds and living rooms are constructed for the troops, and also the protective measures can be more easily enforced. The great advance took place early in 1918, and, once started, continued very rapidly. The troops had no time to take adequate protective measures against infection, suffering the more on this account. In addition, the country through which they were passing was highly malarious. Major Manson-Bahr, in describing the malarial incidence from *Laverania malariae* and *Plasmodium vivax*, shows that in the eastern sector from the Jordan Valley to Jerusalem, during the summer of 1918, the benign tertian epidemic commenced the beginning of June, and reached its maximum of 340 cases a week on July 13th. The malignant tertian epidemic commenced later and was very severe, reaching its maximum of 1,800 cases a week on October 12th. In the western sector from Jaffa to Ludd the benign tertian epidemic was the more severe, and reached its maximum of 850 cases a week on August 3rd. It was followed by a less severe epidemic of malignant tertian, reaching its maximum of 600 cases a week on the same date as in the eastern sector.

	1915.		1916.		1917.		1918.		1919.	
	No.	%	No.	%	No.	%	No.	%	No.	%
Salonica	5	1.4	117	32.2	173	48.0	59	16.6	3	1.0
East Africa... ...	2	4.8	10	23.8	22	52.4	7	16.6	1	2.4
Palestine and Egypt	3	4.8	7	11.3	13	20.9	38	61.4	1	1.6

I have to thank Sir Lisle Webb, Chief Commissioner to the Ministry of Pensions, for his kindness in allowing me to publish these cases, and for some of the statistics supplied to me.

A NOTE ON THE SURGICAL USES OF THE FASCIA LATA.

BY

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THE extraordinary variety of injuries to all parts of the body which occurred during the war afforded to surgeons concerned in their treatment vast opportunities for exercising their ingenuity and invention. The application of the fascia lata to the repair of many of these lesions certainly received a great stimulus, and the results were on the whole eminently satisfactory. As one who, during the last eighteen months, has utilized fascia lata fairly extensively in different conditions, I venture to indicate some of its more obvious applications.

I. *In the repair of, or as a substitute for, tendons and ligaments:*
- (*a*) Injuries in which there is loss of tendon substance, recent or old standing.
- (*b*) In lieu of dividing and transplanting a healthy tendon, in order to reinforce a paralysed one, connecting these two by a fascial intermediary tendon.
- (*c*) As a substitute for intrinsic or extrinsic articular ligaments—for example, the crucial (Hey Groves) and the internal lateral ligaments of the knee.
- (*d*) As an auxiliary ligament—for example, in lieu of tendon fixation for a "dropped" foot—a Y-shaped fascial ligament may be employed; or in recurrent dislocation of the shoulder a fascial "sling" passed through the quadrilateral space may be used, or it may be passed through a hole drilled in the head of the humerus and the acromion process.

II. *For clothing an area which has been deprived of its normal covering tissue.*
- (*a*) After the excision of adherent scars.
- (*b*) In the abdomen, after extensive resections of the colon, to aid in "peritonization."
- (*c*) In arthroplasties, interposed between the two raw bony surfaces (Murphy).
- (*d*) As a sheath to protect a nerve suture.
- (*e*) In gunshot or other injuries of the skull, where there has been extensive loss of substance of bone and dura mater prior to bone grafting.

III. *To reinforce defects in the parietes of the chest, the abdomen, and of vessels.*
- (*a*) To cover in a lateral defect in a vessel wall.
- (*b*) In repair of the urethra, after excision of stricture.
- (*c*) In closure of faecal fistulae and ventral hernia, where parietes are deficient.
- (*d*) In reconstruction of an intercostal space in hernia of the lung.

There are doubtless many other purposes to which this valuable tissue can be applied, and the above list only aims at giving some concrete idea of its scope.

Among the many little details that count towards success are the following: first, that the graft should be of

ample proportion and should be treated with the same respect as a bone graft; secondly, when used as a new ligament, the greatest care should be taken to imitate the anatomical attachments of its predecessor; and thirdly, that when used as a ligament, tendon, or to reinforce parietes, there should be no "slack" after suture is completed.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

INCUBATION PERIOD OF SCARLET FEVER.

IN view of the fact that in accordance with "A Code of Rules for the Prevention of Infectious and Contagious Diseases in Schools," issued by the Medical Officers of Schools' Association, the incubation period of scarlet fever is given as "one to eight days, usually three to five days," I think, perhaps, the following instances in which the incubation period appears to have been ten days or more may be of interest. It may, of course, be said that they do not prove anything conclusively, but anyway they are in favour of the incubation period being longer than it is usually supposed to be.

1. Two children (M. and P.) travelled to a seaside convalescent home from London on February 9th with two other children who had recently been under treatment for scarlet fever. M. was taken ill with the disease on February 19th, and P. on February 24th. No other cases in the home on arrival.
2. Two children (T. and B.) travelled to a seaside convalescent home from London on February 2nd with a child who had recently recovered from scarlet fever. T. was taken ill on February 23rd, and B. on March 1st. Possible infection in the home.
3. Two children returned from their home to a private boarding school. The next day notice was received that a sister at home, with whom they had been in contact, had developed scarlet fever. The two children were immediately isolated, and developed scarlet fever, one nine days and the other ten days after returning to school.
4. A child was admitted to a private boarding school, and developed scarlet fever exactly ten days afterwards. So far as could be ascertained, there were no other cases in the school or neighbourhood.
5. In a convalescent home four cases of scarlet fever occurred under the following circumstances: F. C. arrived on January 27th, was taken ill on February 26th; E. D. arrived on February 3rd, was taken ill on February 22nd; F. C., an inmate, developed scarlet fever on February 26th; M. W. arrived on February 6th and was taken ill on March 12th.
6. In a convalescent home two children were taken ill with scarlet fever on July 31st; they arrived at the home, where there had been no other cases, on July 23rd; another child arrived on August 13th and was taken ill on August 22nd.

Broadstairs. A. M. WATTS, M.D.

MEASLES, INTUSSUSCEPTION, AND APPENDICECTOMY IN A BABY SEVEN MONTHS OLD.

A BOY aged 7 months, breast-fed, was admitted into the Dorset County Hospital on November 29th, 1919. He had measles, but up to the previous day he had otherwise seemed well. On the 29th he passed a healthy motion early in the morning, and about 11 a.m. he seemed to be in pain. He vomited his feed at 1 p.m., and passed a green motion. He refused the breast during the remainder of the day, and had spasms of screaming and retching. At 7 p.m. he passed a blood-stained motion with mucus. Shortly afterwards he was admitted to the hospital.

On admission the patient was a well nourished child thickly covered with the rash of measles. A hard mass could readily be felt to the left of the umbilicus. Under an anaesthetic an incision 2 inches long was made over the swelling. A finger could follow the swelling towards the left iliac fossa, and after a little manipulation that portion of the descending colon containing the apex of the intussusception was delivered into the wound, and by gentle pressure below its lowest point the intussusception was reduced with surprising ease. As each portion of the bowel involved was dealt with it was returned into the abdominal cavity until the ileo-caecal valve was reached. The appendix, abnormally long, was for half its distal portion very dark in appearance—almost gangrenous—this apparently being due to its blood supply having been cut off. The appendix was removed. The caecum and ileo-caecal valve felt very thick and oedematous, and the peritoneal coat of the former was roughened. The child stood the operation well; there was no vomiting subsequent to the operation. He took his feeds well; these were restricted at first in amount and frequency. A small greenish stool was passed eight hours after the operation, and faecal matter began to appear in the stools in twelve hours. The temperature, which was raised on admission, dropped to normal in a few days, and the wound healed by first intention. It was fortunate that the caecum and appendix could be pulled into a wound to the left of the umbilicus.

The combination of measles, appendicectomy, and a successful operation for intussusception of such a long portion of the bowel, in a child of 7 months, makes the case perhaps worthy of record. I have seen the boy a short time ago, and he has been in perfect health since his operation.

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THE SARCOPTIC MANGE OF THE DOG IN MAN.

THE lecture recently given by Professor Hobday before the combined meeting of the Royal Society of Medicine and the Central Veterinary Medical Society on the contagiousness of certain diseases of animals to man, recalls to my mind an instance five years ago when a pug dog, the subject of sarcoptic mange, transmitted the disease to a family of six people.

The little animal was a great pet, and became very badly infected before any treatment was adopted, the extent and nature of the disease not being realized. The dog used to lie against the people's legs in front of the fire, often for half an hour or more at a time, pressing himself against them, and each developed the infection, which was in the form of an extremely irritable rash, not unlike lichen planus in appearance. It lasted for about six or eight weeks, and did not disappear until after the skin disease on the dog had been taken in hand, treated and cured.

I am pleased to see that attention has been drawn in a medical gathering to the subject of the contagiousness of certain animal diseases to man, as I am quite sure that its importance ought to be more fully realized and lectured upon in the curriculum of the student.

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Reports of Societies.

PUERPERAL SALPINGO-PERITONITIS.

AT a meeting of the Section of Obstetrics and Gynaecology of the Royal Society of Medicine, on March 3rd, with the President, Professor HENRY BRIGGS, in the chair, Dr. ALECK W. BOURNE read a paper on "Acute puerperal salpingo-peritonitis." He justified his modification of the name of a common disease as it emphasized the fact that the condition was entirely different from acute non-puerperal salpingitis in morbid anatomy, physical signs, and treatment. The morbid anatomy was largely determined by the anatomical position of the involuting tube and uterus at the time when the inflammation occurred; suppuration thus tended to be primarily extra-pelvic and abdominal, causing abscesses above the brim of the pelvis. Further points were the early obliteration by adhesions of the pouch of Douglas, secondary ovarian infection, secondary cellulitis of the upper portion of the broad ligament, and the arrest of uterine involution so long as infection was unrelieved. The cause of puerperal salpingitis was, he stated, an organism (streptococcus in three of the tubes examined) which either ascended from the uterus, probably the commonest mode of infection, or which had existed dormant in the tube from pregnancy, as proved by a case of salpingitis following Caesarean hysterectomy where the tubes were absolutely normal, or which provoked an exacerbation of a pre-existing salpingitis during the puerperium. The symptoms were those usually found in acute peritonitis of the lower abdomen, and were not particularly noteworthy. The chief points were that the temperature and pulse tended to be high, more so, for instance, than in acute appendicitis; the lochia was usually unaltered; and retention of urine or painful micturition might denote an extensive secondary cellulitis. The physical signs required careful examination. On examination of the abdomen the initial tenderness was at a point just below and external to the umbilicus; the fundus uteri was at first median and rose about two inches above the

symphysis, and pressure on the fundus soon caused pain; there was pronounced tenderness above the inner part of Poupart's ligament, indicating secondary cellulitis; after an interval there was rigidity and tenderness of the lower abdomen; any hypogastric tumour, apart from the fundus uteri, was due to omentum and coils of adherent intestine; and, later, asymmetry of the fundus uteri was caused by secondary cellulitis. On vaginal examination there was an absence of physical signs except general tenderness, but later a mass could be felt high up in the postero-lateral fornix, due to the ovary surrounded by the adherent coils of intestine. By the rectum, the formation of a tubo-peritoneal mass was more usually felt, and at an earlier date, than by the vagina. The treatment was early laparotomy. The chief reasons for early operation were the prevention of extending peritoneal abscesses; the anticipation of the formation of dense adhesion; prevention of infection of the ovary, which occurred early and was difficult to eradicate apart from oöphorectomy; prevention of a spreading secondary cellulitis; and to enable the subinvoluted uterus to undergo involution and thus prevent a chronic uterine hypertrophy.

Dr. GEOFFREY EVANS read a paper on "A study of the condition of the arteries in a uterus removed twenty-four days after delivery." He referred to the work of A. Helme, who showed in 1887 that fatty degeneration did not occur in the normal involution of the rabbit's uterus; but more recently James Goodall had established the opinion that fatty degeneration did occur in normal uterine involution. Dr. Evans's paper was founded on a specimen prepared by Gaskell's method and cut frozen, so that the cells retained more nearly their normal form, and any fat present was not dissolved out of the tissues. He found that the histological picture was that of normal arterial involution, as it occurred elsewhere in the body under physiological conditions; and there was no fatty degeneration of the muscle fibres in the medial coats of the arteries. His submission, therefore, was that the question of the presence or absence of fatty degeneration in the media of the vessels in the puerperal uterus was not as yet definitely settled.

Dr. RUSSELL ANDREWS, Dr. HERBERT SPENCER, Dr. HERBERT WILLIAMSON, and Dr. A. C. PALMER showed a series of pathological specimens.

TREATMENT OF UTERINE PROLAPSE.

AT a meeting of the Edinburgh Obstetrical Society, held on March 9th, with Dr. WILLIAM FORDYCE, the President, in the chair, Dr. SAMUEL CAMERON (Glasgow) read a paper on the surgical treatment of uterine prolapse. He referred to the fact that the plastic operation had developed within the past twenty years. Nowadays he never used methods of abdominal fixation, and believed that adequate results could be obtained by plastic means. He employed three operations, the choice being mainly influenced by the age and by the physical condition of the patient, and also by the number of living children which she had. When the patient had several healthy children, and was about the menopause, the interposition operation was recommended; but if she was a young woman, Fothergill's modification of colpo-perineorrhaphy should be the operation of election. In frail elderly women he practised an operation which he had devised. Within the past five years he had operated on 292 cases of prolapse. The interposition operation he had performed 136 times and, so far as records showed, these cases had remained cured. In doing this operation on a patient before the menopause he always carried out sterilization. He recorded one case in whom this precaution was not taken, and who subsequently became pregnant. The gestation continued to full time, when Caesarean section was performed, with the birth of a healthy child weighing 9¼ lb. The uterus had expanded entirely at the expense of the posterior wall. It was interesting to note that the bladder had been pushed to one side, rendering access to the uterus easy.

The operation which he performed in frail elderly women consisted in amputation of the cervix by a circular method after a flap of vaginal mucous membrane had been reflected up for a short distance. An incision was then made in the perineum as for ordinary perineorrhaphy, and the incision was deepened until the vaginal wall was liberated to a fair extent. The cervical stump was pulled downwards and moored by sutures in the raw tissues of the vaginal wall and perineum. Thereafter the perineum was closed up in the ordinary way. He had performed this operation twenty-four times, and only one had failed, owing to non-union of the cervix with the vaginal flap and perineal tissue. The first case was operated on over four years ago. His fear when he first performed this operation was that the patients might develop pyometra, but so far this had not happened.

The PRESIDENT had never performed the interposition operation, which did not, to him, seem to possess any advantage. He believed that an extensive plastic operation was all that was required.

Dr. HAIG FERGUSON found that the extensive plastic operation as ordinarily practised gave excellent results, even with the worst cases of prolapse. He thought that Dr. Cameron's operation was associated with a distinct risk of pyometra, for one knew that even after ordinary cervical repair or amputation this result might follow.

Haemorrhage with Eclampsia.

Dr. FORDYCE and Dr. R. W. JOHNSTONE read a paper on a case of concealed accidental haemorrhage with eclampsia. The case was a primipara who had been well up till the eighth month of pregnancy, when without warning she was seized with pain in the abdomen and breathlessness. Soon afterwards vaginal haemorrhage appeared. On admission to hospital she was collapsed, there was considerable oedema of the trunk and lower limbs, and the urine was scanty and contained a large quantity of albumin. As the pulse rate increased, and toxic symptoms began to manifest themselves in a dimness of vision, sickness and a slowly increasing tendency to coma, Caesarean section was determined upon. At the operation the upper part of the uterus was deeply congested and haemorrhagic. It was most marked in the region of the right cornu, where the wall was deep purple. The same appearances were present in the adjacent broad ligament and Fallopian tube. The appearances suggested an obstruction of the right ovarian vein. The placenta was detached over its right half by a large retroplacental clot, whilst its left half was still attached to the posterior uterine wall. The child was dead. On subsequent examination the uterus showed the appearances associated with "diffuse utero-placental apoplexy." The muscular wall was ploughed up by haemorrhage, the muscular fibres showing a secondary degeneration. The placenta presented an interesting appearance. The detached portion had a deep purple colour and was distinctly marked off from the healthy area. Microscopically the separated area showed the signs of early infarction which have been described by Dr. Young, namely, coagulation in the intervillous spaces and congestion and crowding of the villi. The liver and kidneys showed the changes characteristic of eclampsia.

Dr. DOUGLAS MILLER read a report of a case of placenta praevia associated with *post-partum* eclampsia. The patient, a 6-para, had been bleeding intermittently for a month and more or less continuously for a week. She was almost moribund on admission. She was six and a half months pregnant. The urine contained a trace of albumin on admission. Delivery was carried out by version. Next day headache and epigastric pain developed, and there was a heavy deposit of albumin in the urine. Forty hours after labour she had a convulsion, followed by coma from which consciousness was not regained. *Post-mortem* examination of the liver and kidneys showed the changes characteristic of eclampsia. The praevia portion of the placenta was greatly congested, and microscopically exhibited the features of recent red infarction. This case was consistent with the view that the toxaemia was dependent upon an absorption of poisons from the disintegrated portion of the placenta.

The PRESIDENT said that these cases seemed to lend support to Dr. Young's explanation of eclampsia. If this theory were correct, however, he wondered why toxaemia did not occur oftener.

Dr. CAMERON could not understand why one should have to deal so often with cases where there was obviously a partial detachment of the placenta or ovum, and yet there was an entire absence of toxaemia.

Dr. LACKIE asked Dr. Young how he would explain those cases where the amount of albumin remained stationary.

Dr. YOUNG referred to the work which had been done in other clinics, and which, along different lines, lent support to the view that a severe toxaemia might be dependent upon

the absorption of the earliest products of tissue degeneration, a view which he had advanced in 1914. He cited especially the work of two French observers, who found that animals in which the uterine veins were ligatured for ten minutes died after a period of thirty to forty hours with signs closely simulating those of eclampsia. The fundamental point in his interpretation was that the amount of toxaemia varied directly with the degree of placental involvement. In some cases the toxaemia was slight, whilst in other cases it was severe. Even if the patient's life were not endangered there might be permanent damage of the kidneys. In support of his view he instanced the fact that Dr. Miller had found toxaemia of varying degrees in 60 per cent. of cases of placenta praevia.

PSYCHOLOGY OF HOSPITAL PATIENTS.

A MEETING of the Ulster Medical Society was held in the Medical Institute, Belfast, on March 10th, with the President, Dr. THOMAS HOUSTON, in the chair. Mr. FULLERTON showed a case of deformity in a young child, and skiagrams of the case were thrown on the screen; the left femur was absent and the left leg was much smaller than the right.

Dr. W. CALWELL read "Notes on the examination of the mentality of patients in a general hospital." He referred to the exceedingly brief account given in the ordinary medical textbooks of the psychology of patients; a systematic and scientific case-taking was undertaken in some of the textbooks of insanity but was absent in those of general medicine. He described the later advances in cerebral physiology by Head and others, and the changes in psychology dating from Freud. A brief history was given, ending with Rivers's attempt to correlate the results of these two investigations with the manifestations of the psychoneuroses, especially as seen in the war. War experience supported Freud's mechanisms but negatived his sex-instinct predominance. Owing to the large amount of work in the practical application of psychology brought about by the war and to the general interest taken in it by the public, it was very advisable that medical men should know the principles. The lay psycho-analyst was already here, and would do more harm than the bonesetter, osteopath, spiritualist, and Christian scientist. Dr. Calwell gave a tentative scheme to enable students and medical men to make a psychological examination of a patient.

Dr. MCKISACK and Dr. MARSHALL emphasized the necessity of making greater provision for these cases.

Surgery of Bones and Joints.

Mr. S. T. IRWIN then read a paper on some problems of orthopaedic interest exemplified by the surgery of bones and joints. He commented on the relative scarcity of such cases in the wards of general hospitals prior to the war, their prevalence subsequently, and the increased interest in this speciality generated by the work done for the benefit of the wounded soldier. There was thus not only a great extension in the type and number of diseases and deformities coming within the purview of the orthopaedic surgeon, but also many orthopaedic problems presenting themselves from day to day before the general surgeon. While this justified the claim of Sir Robert Jones that every orthopaedic surgeon should have a preliminary training in general surgery, it demanded as well that if the general surgeon was to exist as such in the future he must possess a training in the general principles of orthopaedics. The first problem dealt with was that due to fracture of the long bones. Excluding those fractures which were suitable for treatment by splinting, there was a smaller proportion demanding treatment by open operation. These might be subdivided into two main classes—(1) those requiring plating after the method of Lane, and (2) those requiring bone-grafting. Of these, Lane's method was more suitable for recent simple fractures with special deformities—for instance, spiroid fractures of the femur and tibia where accurate anatomical restoration was difficult to obtain by means of splints, and for simple fractures showing non-union due to the interposition of soft tissue between the fragments. Bone grafting, on the other hand, was essential for gap fractures where other operation, such as the step operation, was deemed inadvisable. Bone grafting was rendered scientifically possible by the experimental work of Macewen, who in 1880 got tibial grafts to grow in a flail humerus, but to-day it gained its main advocacy from America, owing to the work of Albee and his followers. A number of lantern slides of fractures treated by each of these methods was used to illustrate the importance of selecting a particular method of treatment for a particular condition of fracture. The paper was illustrated by a series of lantern slides.

Rebielus.

THE HEALTH OF THE INDUSTRIAL WORKER.

IN *The Health of the Industrial Worker*,[1] Professor E. L. COLLIS and Dr. M. GREENWOOD deal with the medical aspect of industry. As is pointed out by Sir George Newman in an introduction he has written for the volume, the ill health from which the worker in almost all trades and in all districts suffers is due for the most part to preventable maladies, and these in turn are largely attributable to the neglect of hygiene. The loss of time and energy thereby induced, though less impressive than that due to accidents and special occupational diseases, represents a much larger drain on industry. The economic side of industry is closely bound up with the medical side, for the most economical production can be obtained by employing a man only when he is at his best in mind and body, and under circumstances in which he can yield his maximum output of both.

No men better suited than the authors to the task they have essayed could be found, for their training and experience have been thorough, both on the practical and the theoretical side. The result of their efforts forms a compendium of the present state of knowledge which will prove invaluable, not only to the factory doctor, but to the welfare worker, the factory inspector, and the enlightened factory manager.

The book opens with an interesting historical summary of industry, and one cannot read without a shudder of the terrible conditions under which many industrial workers were compelled to labour a century ago. Thanks to more enlightened ideas and to industrial legislation, these conditions are now a thing of the past, but it is probable that few realize how much still remains to be done. The Report of the Ministry of National Service, issued last year, gave an inkling of the truth when it stated that only a third of all the men of military age in Great Britain could be classed as Grade 1, that is, as perfectly fit and healthy. In some industries, such as that of mining, the proportion was as high as 73 per cent., but in sedentary occupations, for example, tailoring, it was miserably low. Improvement in the conditions of industry on the lines indicated by the authors cannot fail to have a favourable influence on the physique of the workers.

In later chapters the authors deal with statistical methods and the health of the worker as indicated by vital statistics. A particularly valuable chapter treats of tuberculosis and industry. The effect of environment is discussed at some length, and it is pointed out that, whilst at ages over 35 the town dwellers die of phthisis at a much greater rate than the rural dwellers, the excess is far greater amongst males than amongst females. This excess is most marked at the age periods at which the largest proportion of urban males are industrially employed, and the smallest proportion of industrial females—the age of married life. The authors surmise that industrial employment is a great factor in producing the difference, but they give reasons for thinking that, as a rule, the deleterious influence of factory life acts through the home environment. Vitality is lowered by adverse factory conditions, and the men in consequence succumb to evils associated with the home; whilst the women, who have not been rendered specially susceptible, escape. The incidence of another disease, cancer, likewise appears to be related to industrial conditions. The authors point out that the

[1] *The Health of the Industrial Worker.* By E. L. Collis, B.Ch. M.A., M.D.Oxon., M.R.C.P.Lond., M.R.C.S.Eng., and M. Greenwood, M.R.C.P.Lond, M.R.C.S.Eng. Containing a chapter on Reclamation of the Disabled, by A. Collis, M.A., M.D.Cantab., M.R.C.S.Eng., D.P.H. Durh.; with an introduction by Sir G. Newman, K.C.B., D.C.L., M.D., F.R.C.P. London: J. and A. Churchill. 1921. (Roy. 8vo, pp. 469; 38 figures. 30s. net.)

sudden change which has taken place in the conditions of life consequent on the development of modern industry has been associated with a rapid rise of cancer mortality, and this rise is greatest where modern industry is most developed.

The practical aspects of factory work are treated of in useful chapters dealing with industrial activity and fatigue, with the causation and prevention of accidents, the feeding of the worker, and the provision of washing accommodation and cloak-rooms. The importance of adequate ventilation and lighting in the workshops is discussed at length, and many improvements are suggested. The industrial employment of women is dealt with in detail. In discussing the many obstacles to employment which have been suggested, the authors conclude that anaemia is benefited by regular occupation, whilst menstruation is not adversely affected by moderate physical work.

The book is for the most part very readable, and is lightened by occasional quotations from early writers. At times, it must be admitted, it is rather stiff reading, which the non-mathematical reader will find a little indigestible; but this defect, if defect it be, is almost inherent in the nature of the evidence it is desired to adduce. Occasionally, also, masses of tabular matter are printed which seem redundant. Take, for instance, the inadequately explained tables on pp. 366–372, dealing with labour turnover. However, these are minor blemishes, which do very little to detract from the many excellences of the book.

SURGICAL ASPECTS OF DYSENTERY.

MR. ZACHARY COPE has republished his Hunterian lecture in an amplified and extended form in a volume with the title *Surgical Aspects of Dysentery, including Liver Abscess.*[2] He has been encouraged to do this, he tells us, by the fact that the literature of the surgical aspects of dysentery is scanty, scattered, and not readily available. The result is an excellent little book, which covers the whole field of dysenteric disease very thoroughly. Whilst it is addressed primarily to the surgeon, the physician, too, would profit by reading it. Mr. Cope has no special axe of his own to grind, and the man who operates on every lump in the abdomen at sight will do well to take counsel of Mr. Cope, who is a restrained, conservative, and wise adviser.

Dysentery and its results had before the war mainly an academic interest. So many thousands of Englishmen, now safely in their homes, have suffered from this disease during the past six years that it behoves all of us who did not gain a first-hand experience of the subject in the East to repair the gap in our knowledge. For dysentery is essentially a disease which is not over in a day. Infection lurks behind; the smouldering fire is apt to break into a blaze.

The difficulty of diagnosing between an attack of acute oedematous colitis and appendicitis is well discussed. It is important to make a correct diagnosis, since operation on this type of dysentery is fraught with danger. We note that Mr. Cope prefers valvular caecostomy in chronic dysentery to appendicostomy, and thinks that it has a definite place in the therapeusis of this disease. Occasionally an open caecostomy may be called for, and even an ileostomy. Cases are quoted to illustrate the indications for these operations, which are only to be undertaken in special circumstances. In the section on liver abscess we are on more familiar ground; it is well written, and is illustrated by two admirable colour plates and some black and white drawings. The technique of needling the liver and of transpleural exploration is well described. The book is pleasant to read and convenient to handle.

APPLIED EUGENICS.

MR. PAUL POPENHOE, the editor of the *Journal of Heredity*, and Professor R. H. JOHNSON have conjointly produced a volume on *Applied Eugenics*,[3] which admirably presents the eugenist position. The book is a veritable mine of information: it contains twenty chapters and six appendices, and it is fully illustrated. The facts and theories upon which the eugenist bases his programme for racial betterment are clearly set out, and the means by which a superior type might be developed are fully indicated. In the earlier chapters the authors examine the contentions that environmental influences are capable of changing inherent characteristics, and that such changes can be transmitted in the offspring. In criticizing these views, the work of Galton on twins and statistical studies by Karl Pearson and others are utilized, and a chapter is devoted to the question of the modification of the germ plasm. The Lamarckian doctrine is discussed in relation to mutilations, diseases, results of use and disuse, and physico-chemical effects of environment, special attention being given to the problem of the influence of alcohol in the production of racial degeneracy.

Having developed the view that differences between human beings are due to heredity rather than the result of environmental influences, the question of the inheritance of mental capacities is approached. Here the psychopathologist comes in for a good deal of criticism. While we feel that he would have more to say in defence of his views than the quotations in this volume would seem to imply, yet in some instances there is undoubtedly a tendency to stress unduly the influence of environment in the production of mental disorder and to over-emphasize the possibility of prevention from this point of view. This being so, a little criticism of the too optimistic psychopathologist will do no harm.

Chapters are devoted to the consideration of the laws of heredity and natural selection, followed by an account of the origin and growth of the eugenic movement. Evidence is then brought forward as to the desirability and possibility of enforcing certain restrictions on marriage and parenthood. The classes of the community which could properly fall within the scope of such treatment are indicated, these being the insane, feeble-minded, epileptic, and criminal. The suggested methods of restriction are critically examined, and that of segregation is favoured as, amongst the coercive measures, the most generally practicable. Attention is given to the possibility of improvement in sexual selection, and the directions indicated in which it might become practically realized. Amongst other subjects discussed are the birth rate, race suicide, miscegenation between white and black, immigration, the effects of war on the race, and the defects and uses of the science of genealogy. Some of these questions are, of course, of more vital significance to the American people than to the European races. The influence, beneficial or the reverse, of current social trends on the aims of eugenics is discussed in relation to taxation, "back to the farm" movement, democracy, child labour, compulsory education, vocational guidance, minimum wage, bonuses, mothers' pensions, sex hygiene movement, prohibition, and celibacy of teachers. The concluding chapters are concerned with "religion and eugenics" and "eugenics and euthenics."

From this brief survey it will be apparent that this volume includes within its covers discussion on a wide range of social problems. However opinions may differ as to the methods by which these vital problems are to be solved, no one can afford to ignore their existence. The question of racial progress or decline should be the concern of every thoughtful citizen. There is an obvious need for an increasing number of "eugenically superior or desirable" persons in the community. Persons who will be capable of reproducing a type with the following characteristics: "To live past maturity, to reproduce adequately, to live happily, and to make contributions to the productivity, happiness and progress of society." The eugenist offers tentative suggestions as to the methods by which such a desirable end could be achieved; and an aim such as this is entitled to respectful consideration. In this volume the case for eugenics is scientifically developed and clearly and temperately stated. We can thus thoroughly recommend it to all those who are interested in the question of racial betterment.

CLINICAL RADIOLOGY OF THE HEART AND AORTA.

THE first edition of Professor VAQUEZ and Dr. E. BORDET'S *Le Coeur et L'Aorte: Etudes de Radiologie clinique*, appeared in 1913, a second was called for five years later,

[2] *Surgical Aspects of Dysentery, including Liver Abscess.* By Zachary Cope, B.A., M.D. M.S.Lond., F.R.C.S.Eng. London: H. Frowde, and Hodder and Stoughton. 1920. (Demy 8vo, pp. 167; 19 figures, 2 plates. 12s. 6d. net.)

[3] *Applied Eugenics.* By Paul Popenhoe and Roswell Hill Johnson. New York: The Macmillan Company. 1921. (Post 8vo. pp. xiii.+459; 46 figures. 14s. 6d. net.)

and a third edition[4] with additions, especially on pathological and senile dilatation of the heart, bears the date of May, 1920. This work is on much the same lines as, and supplements, *Radiologie des vaisseaux de la base du coeur*, by the same authors, which was reviewed in our issue of December 11th last (p. 896), and here again the 188 figures are reproductions of orthodiagraph screen tracings and not of skiagrams. The radiological methods employed in studying cardiac and aortic disease are first described with a comparison of orthodiagraphy and teleradiography. The shadow cast by the normal heart in the various positions is then fully considered and the measurements thus obtained are illustrated by a number of tables and drawings, including one of the authors' goniometer. The various pathological conditions are then systematically dealt with, beginning with valvular disease. The clinical difficulties in diagnosing pericardial effusion are greatly diminished by the assistance of radiology; but it is not infallible, for pericarditis with a small effusion and a large heart may imitate cardiac hypertrophy, and conversely a dilated heart, especially as the result of alcoholic myocarditis, may produce a picture suggesting effusion. The decision whether or not Brauer's operation of cardiolysis should be performed can only, in the author's opinion, be determined by radioscopic examination. It is shown that the conditions necessary for the production of Broadbent's sign—systolic retraction of the chest wall between the eleventh and twelfth ribs at the back on the left side—are not only pericardial adhesions to the heart and the diaphragm but also to the chest wall in front; it may also be noted that the authors have observed this sign with widespread pleuritic adhesions without adherent pericardium.

The special characters of the enlarged heart of the aged are detailed, and it is pointed out that this condition may be found in persons who are comparatively young in years though the subjects of arterio-sclerosis and cardiac debility. The detection of aortitis is materially assisted and, indeed, in many instances made possible only by means of radiology. In making the diagnosis the measurements of the aorta are carefully taken and its pulsations, depth of shadow, and its contour are estimated; in so doing the influence of age must be taken into account. Orthodiagraphy renders it possible to watch the progress of aortitis, and to give a prognosis with greater accuracy than can be attained by the ordinary methods of physical diagnosis—for example, in cases of aortitis without dilatation, but with calcification, parts of the vessel, such as the descending aorta, that are normally invisible become obvious. The differential diagnosis of aneurysms of the thoracic aorta from other conditions, such as skeletal deformities, pulmonary consolidations, cysts, and tumours, is considered. This work, which is the outcome of extensive personal observation, closes with a chapter on the localization of projectiles in the heart and pericardium.

NOTES ON BOOKS.

A BOOK intended for "the use of medical students and practitioners" in India, as RAI BAHADUR JAISING P. MODI'S *Elements of Hygiene and Public Health*[5] professes on its title-page to be, ought to present a clear exposition of the general principles of sanitary science, and of the application of these to the circumstances of the country and people for whose benefit it has been composed and published. Judged by this criterion the work under notice, of which a second edition has been called for within a "short space of time," is admirably adapted to fulfil the office of an educational textbook and an instructive handbook for the guidance of all concerned in the adoption of measures for the preservation of health and prevention of disease and death. The general chapters are well arranged and written, and contain full and accurate information. The chapters relating to schools, hospitals, industrial occupations, meteorology and climate, food and infectious diseases, take into account Indian conditions, and more special chapters concern village sanitation, fairs, famine camps, and poor-houses. Practical instruction, founded on a knowledge of the requirements of these various subjects, are laid down in full and feasible detail. Several appendices, including model by-laws, and directions relating to water supply conservancy and other sanitary measures, are added. Sixty-seven illustrations constitute a helpful feature of the book. The arrangement, printing, and indexing are worthy of commendation.

The British Journal Photographic Almanac[6] for 1921 is well described in its subtitle as a photographer's daily companion. It contains a directory of photographic societies and similar bodies, but its special value to the practising photographer is the long epitome of progress written by the editor, Mr. George E. Brown, F.I.C. The material, which is arranged under a series of headings, including apparatus, printing processes, and colour photography, is handled in a masterly manner. Convenient features are the collection of formulae for the principal photographic processes in use, and the series of tables containing data to which the photographer often has occasion to refer. The price has been raised, but it is still very reasonable.

In *The World of Sound*[7] Sir WILLIAM BRAGG has collected in book form the six lectures he gave to an audience of young people at the Royal Institution during the Christmas holidays two years ago. The volume includes many illustrations, diagrammatic and otherwise, explanatory of the text, and a number of dainty head- and tail-pieces and vignettes, allegorical in intention, from the pencil of Miss Audrey Weber. The lectures provide a very agreeable introduction to this branch of physics; the lecturer's scope and method may be gathered from his headings: "What is Sound?" "Sound in Music," "Sounds of the Town," "Sounds in the Country," "Sounds of the Sea," "Sounds in War." In publishing them Professor Bragg has done his duty by the many youngsters and grown-ups who were not fortunate enough to hear his words and see his fascinating experiments, and it is of interest to note that several of the experiments were repetitions, using the same apparatus, of those performed in the same room by Tyndall half a century ago. The last chapter shows how "almost everything we have discovered about sound has found some application in the war."

[4] *Le Coeur et L'Aorte: Études de Radiologie clinique.* By H. Vaquez, Professeur à la Faculté de Paris, et E. Bordet, ancien chef de laboratoire adjoint à la Faculté de Médecine de Paris. Troisième edition. Paris: J. B. Baillière et Fils. 1920. (Roy. 8vo, pp. 264; 188 figures. 20 francs.)

[5] *Elements of Hygiene and Public Health.* For the use of Medical Students and Practitioners. By Rai Bahadur Jaising P. Modi, L.R.C.P. and S.Edin., L.R.F.P.S.Glasg. Second edition. Calcutta and London: Butterworth and Co. 1920. (Demy 8vo, pp. 507; 67 figures. 12s. net.)

[6] London: Henry Greenwood and Co., Ltd. Sixtieth issue. (2s. net).

[7] *The World of Sound.* By Sir William Bragg, K.B.E., D.Sc., F.R.S. London: G. Bell and Sons, Ltd. 1920. (Cr. 8vo, pp. 196; 93 figures. 6s. net.)

IRISH MEDICAL SCHOOLS' AND GRADUATES' ASSOCIATION.

THE forty-third annual general meeting of this association was held on March 17th (St. Patrick's Day) at Pagani's Restaurant, when Dr. Bulger resigned the presidential chair to Major-General WALLACE KENNY, C.B., A.M.S.(R.), who presided over a large attendance of members. The Chairman of Council, Dr. W. J. CORBETT, presented the annual report, in which it was stated that during the past year no less than three ex-presidents had died, Sir Charles Cameron, C.B., Dr. Phineas Abraham, and Sir James Dick, K.C.B., formerly Director-General R.N.

The festival banquet took place the same evening, when upwards of 100 members and guests (including several ladies) sat down, with Major-General WALLACE KENNY in the chair. After the loyal toasts had been duly honoured (the whole company standing up while they sang "God save the King") the Arnott Gold Medal was presented to Sir Berkeley Moynihan for his great achievements in surgery. In reply to the toast, "Our Guests," Sir BERKELEY MOYNIHAN said that all medical men with laudable ambition desired three things—namely: (1) To make competent provision for themselves and their families in declining years; (2) to attain the good opinion of their *confrères;* and (3) to train younger men to do better than themselves work to which they had devoted their own lives. Nothing gratified himself personally so much as the kindly appreciation of his efforts to attain the last-named object. Continuing, he said that he was proud to claim as his countrymen so many who for generations had been among the foremost in art, in science, in research and professional attainments, to say nothing of those leaders in war and politics whose names were in the mouths of everyone during such times of stress as we had recently been passing through.

Other toasts were proposed by Dr. JAMES A. MACDONALD (President-elect of the Association), Dr. W. DOUGLAS, and Dr. GUBBINS FITZGERALD. The proceedings were much enlivened by songs and piano sketches.

British Medical Journal.

SATURDAY, APRIL 2ND, 1921.

RESEARCH IN RADIOLOGY.

IN recording last week the circumstances of the lamented death of Dr. Ironside Bruce reference was made to the fact that evidence has accumulated supporting the opinion that a severe type of aplastic anaemia may be caused by the effects on the blood-forming organs of the more penetrating radiations, both from the *x*-ray tubes and from radium; the suspicion attaches more particularly to the most penetrating—the gamma rays. Very many of the early workers with the *x* rays suffered from a peculiar form of chronic dermatitis which, in not a few instances, developed malignant characters; mutilating operations became necessary, and the sufferer's long martyrdom often ended in death. The measures devised for protecting the skin from the rays greatly diminished the risks of this nature, but the suspicion then arose that constant working with radium or *x* rays had an injurious influence on the general health. Dr. Mottram, Director of the Research Department of the Radium Institute in London, ascertained that after a certain time definite blood changes occurred, the number of red corpuscles diminishing and the white corpuscles falling well below 4,000 in the cubic millimetre. The last report of the Institute directs that no nurse or attendant who habitually applies apparatus should work continuously for more than three months, and that this period should be followed by a change of occupation or a rest for another three months. It advises also that all the workers should have at least two clear holidays a week to be spent in the open air. It would appear that precautions of the same nature should be taken in dealing with the *x* rays.

The position is obviously very unsatisfactory; the precautions suggested are confessions of ignorance. Inquiry into the physics of both radium and the *x* rays has gone a long way, but the nature of the action of the rays on living tissues, healthy or diseased, is still very much a matter of guesswork, and the technology of the whole subject is in a backward state. The applications of radiology outside medicine are of growing importance; the *x* rays were used during the war for detecting flaws in the workmanship of aeroplanes, and are being applied to the examination of the internal structure of metals. It was, indeed, suggested a year ago that the memory of Sir James Mackenzie Davidson, who had himself suffered from the ill effects of the rays, could not be better commemorated than by the establishment of an institute for research and teaching in radiology. A Mackenzie Davidson Memorial Fund was accordingly established, and an appeal, signed by, among others, Sir J. J. Thomson, then President of the Royal Society, Sir Clifford Allbutt, President of the British Medical Association, Sir Robert Hadfield, recently President of the Faraday Society, and Mr. Bonar Law, was issued. To establish such an institute fully equipped to meet the needs of the metallurgist and the engineer, as well as of medicine, is an ambitious undertaking, and the increasing use of high tension *x*-ray tubes in hospital and private installations makes it urgently necessary to ascertain what precautions can immediately be put into practice. It is, we are informed, proposed at once to appoint a committee to make certain investigations. It is hoped that the Röntgen Society, which did useful work in devising methods of protection early in the war, will join with the Electro-therapeutic Section of the Royal Society of Medicine and the British Association of Radiology and Physiotherapy in the nomination of such a committee, consisting of expert physicists, physiologists, and radiologists.

Dr. Robert Knox, who is secretary of the committee which last year appealed for the establishment of an institute, now proposes that the new committee of investigation should report on the equipment of *x*-ray and electrical departments with a special view to the protective measures to be employed, and should make recommendations for the guidance of the assistants in such departments, dealing in particular with the hours of work and the need for fresh air and change. But his proposals are also of a much more general nature, for he would instruct the committee to investigate the properties of *x* rays and the best means of controlling their action, and also the changes produced in tissues by *x* rays, and particularly the blood changes. Such a programme is too wide for any committee, and Dr. Knox himself perceives this, for he says that what is really required is the provision of research facilities on a large scale, including the equipment of an institute, and the endowment of research into the physical, technical, and biological properties of radium and *x* rays. It is true that the elements of such an institute exist in London. We have in the first place the Radium Institute; we have at the Middlesex Hospital a radiological department under the direction of a professor of radiology, who works in close association with the professor of physics and his department; we have also the research department of the Cancer Hospital, recently reorganized and extended under the direction of Dr. Leitch. It may prove to be possible as a temporary measure pending the establishment of an institute to draw up a programme of work to be divided between several institutions.

Hitherto the medical use of *x* rays and of radium has been far too empirical; we want to get down to basic principles, through the application of which the therapeutic use of these powerful agents may be guided, and their injurious effects prevented.

THE TRANSMISSION OF MEASLES TO MONKEYS.

THE prevention of measles is still an unsolved problem, for attempts to attain this end by strict quarantine are commonly frustrated by the infectivity of patients in the prodromal stage of the disease. Prevention by prophylactic inoculation is a theoretical possibility, but obviously it must be preceded either by the isolation of the virus or the elaboration of a satisfactory method of obtaining it in a pure form, whether or not it is definitely identified microscopically and culturally. Efforts to obtain the virus by cultural methods have so far failed to give positive results; and, though much work has been done by Hektoen, J. F. Anderson and Goldberger, and Sellards on the transmission of measles from man to monkeys, the results have been inconclusive. Blake and Trask,[1] of the Hospital of the Rockefeller Institute for Medical Research, have therefore felt it desirable to carry out an extensive investigation to decide this question. They employed a method that promises the best

[1] F. G. Blake and J. D. Trask, junior: *Journ. Exper. Med.*, Baltimore, 1921, xxxiii, 385-422.

opportunities for the successful transmission of the virus—namely, the introduction of a comparatively large amount of the material believed to contain the virus by the natural pathway of infection; accordingly unfiltered nasopharyngeal secretion from patients in the very early stage of the disease was injected intratracheally into monkeys (*Macacus rhesus*). The question whether the disease had been transmitted was decided, as in the clinical diagnosis of measles, by the appearance of the characteristic symptoms and lesions of the disease. Out of ten monkeys inoculated intratracheally eight developed symptoms closely resembling those of measles in man, after an incubation period of from six to ten days; this afforded presumptive evidence that the reaction in the monkeys was due to the virus of measles. That the reaction was not due to the common organisms of the mouth present in the unfiltered nasopharyngeal washings is shown by the occurrence of the same reaction after the inoculation of the fluid when freed from ordinary bacteria by filtration through a Berkefeld-N filter. The possibility that the reaction was due to filtrable toxic substances in the nasopharyngeal secretion of patients suffering from measles is also excluded by the successful transmission of the infection through six series of monkeys by means of emulsions obtained from the skin, buccal mucous membrane, and the viscera of these animals. Citrated whole blood from monkeys seven to thirteen days after intratracheal injection of the donor monkeys caused the symptoms of measles, but cultures of this blood made in various ways, aerobic and anaerobic, did not show any growth.

The incubation period in the experimental monkeys was usually seven days when the virus was introduced into the trachea, but after intravenous injection of citrated blood the interval was apparently shorter (four days); this difference, it is thought, may be explained by the elimination of the period that probably elapses between the introduction of the virus into the air passages and the invasion of the blood. The onset is attended by malaise, diminution in the leucocyte count, conjunctival injection, and by the appearance of small discrete hyperaemic macules on the labial mucosa and inside of the cheek, which eventually coalesce, and may or may not show the minute bluish-white centres characteristic of Koplik's spots. From one to several days, usually on the third or fourth day after the onset, a characteristic exanthem of maculo-papules appears on the skin, and as a rule first on the face; it is rarely as widespread or as thick as in man, but it runs a similar course; and by the sixth to the tenth day after the onset the animal is well. A careful microscopical examination of the skin, labial mucous membrane, and tongue showed an exact similarity between the changes in man and those in the experimental monkeys. The fact that the average duration of the incubation period in monkeys is three or four days shorter than in human measles may, it is thought, reasonably be explained by the large quantity of virus injected into the trachea.

The only conspicuous difference between the human and the experimentally produced measles is the absence of the respiratory complications in the experimental infection; the authors cannot at present explain this difference, but they argue that it should not be held to constitute a valid reason for rejecting the belief that the reaction observed in the monkeys is caused by the virus of measles. Further observations on the virus and on the problem of protective vaccination will no doubt follow from the Rockefeller Institute and its attached hospital.

BILHARZIA DISEASE.

WE seem now to have the story of bilharzia disease complete, at least in its broad features: The adult worm comes to maturity in man; the intermediate host is a fresh-water mollusc; man is infested again through the skin and can be cured by antimony. The disease has been one of the scourges of Egypt for at least 3,000 years; the late Sir M. A. Ruffer, in a paper published in our columns of January 1st, 1910, described it from the kidney of a mummy of the twentieth dynasty (1250 to 1000 B.C.). The disease is known to exist to-day in most parts of Africa, especially Egypt and the Cape, in Madagascar, Mauritius, Cyprus, the West Indies, Guiana, and Brazil. It is due, as is well known, to infestation by a trematode, *Schistosoma haematobium*, discovered by Bilharz in Cairo in 1851. The mature worm occurs in the portal system of man, and the usual course of events is that the male and female travel conjugated down the anterior mesenteric vein to the wall of the bladder, whence eggs find their way into the urine. Much more rarely the parasite attacks the kidney and the intestines. The egg, when it reaches the urine, already contains an active ciliated miracidium which, when the egg reaches water, is liberated. Leiper showed by systematic inquiry in Egypt during the war that the miracidia enter certain species of fresh-water molluscs (in Egypt *Bullinus* and *Planorbis*). They may be seen swarming round individuals of these species but avoiding other species; they quickly disappear into the snails and establish themselves in the liver; there they form sporocysts from which cercaria are eventually liberated and reach the water; they are free swimming bodies; they infect man through the skin or mucous membrane of the mouth and throat. Theoretically it would be possible to control bilharziasis by breaking the life-cycle at any point. Leiper suggested a campaign in the summer, when the canals and drains are low, against the mollusc intermediate host; this would call for operations on a large scale, and co-operation with the farmers and cultivators would be necessary. The suggestion made by Dr. Christopherson, in a paper published at p. 491, is that a great deal might be done not only to relieve suffering, but to prevent the extension of the disease, by placing facilities for treatment at the disposal of inhabitants of the country districts by travelling dispensaries. The value of treatment of the disease by intravenous injections of antimony tartrate is now well recognized by medical opinion, and the results are so excellent that in Egypt sufferers are spontaneously applying for treatment in large numbers. Drs. Lansbury and Coleman were able to report the results of 1,000 cases in our issue of February 26th, p. 299; they used injections of antimony tartrate given in the manner recommended by Dr. Christopherson a couple of years ago. It is very possible that other salts or preparations of antimony may prove more convenient, and Dr. Cawston is working on this and other aspects of the subject in Durban. Recently the Minister of Health for South Africa, Sir Thomas Watt, informed Dr. Christopherson that the authorities intend to bring the antimony treatment of bilharzia to the notice of all concerned.

THE NUTRITIVE VALUE OF LARD.

THE enormous quantities of pig fat converted into lard for human consumption may be judged from the fact that in 1912 the weight of lard exported from the United States alone was over 500 million lb. The importance of a knowledge of its nutritive value is obvious, and we need, therefore, make no apology for recurring to the subject Since 1913, when McCollum and Davis started the examination of various fats for the presence of the accessory substance known as vitamin A, and found none in lard, it has been generally assumed that the pig, unlike other animals, is peculiar, and does not store this valuable

food factor in its fat. Osborne and Mendel, two years later, carried out a single experiment to ascertain whether this is due to the technical processes to which the pig's fat is subjected in preparation for the market, but found that their own product, "laboratory lard," was equally inadequate for growth. This experiment must be regarded as of little value, as no test with unheated pig's fat appears to have been made. The mystery why the pig should form an exception to other animals has now been finally cleared up by the work of Dr. J. C. Drummond and his colleagues. Their paper[1] contains much of technical interest in relation to lard manufacture, and, as we have previously pointed out, shows to what drastic treatment the fat is subjected in order to produce the white product which appeals to the purchaser. The experimental pigs were reared on various diets, some containing the fat-soluble vitamin and others destitute of it. The photographs of the carcasses when the animals were killed are striking and convincing. One remarkable feature in the pig is the considerable growth which takes place early, even on a diet destitute of the vitamin. This is to form the subject of further work. In all cases, however, growth ceases sooner or later, and thus the necessity for the vitamin is proved. It is well known that animals cannot synthesize it for themselves, but rely on the plant world for its presence, and the green portions of vegetables form the main source of supply. The pig is usually reared on toppings (wheat pollards) and whey, which are cheap, being waste products; both are practically destitute of the vitamin; their fat, even without treatment, contains none. But if they are grass-fed in addition, then they store the vitamin in their body fat. The low nutritive value of lard is therefore due to two causes: first, the erroneous feeding of the pig; and secondly, the destruction of any vitamin which might be present in the natural fat owing to its exposure to oxidation at high temperatures during its subsequent treatment. Reform is therefore called for in two directions: first, the farmer must be instructed to feed his pigs on a more natural diet; and secondly, the public must not insist on a product which appeals merely to the eye. The so-called refining of foods may often refine away a valuable ingredient. A striking illustration of this has been recently shown to occur by Dr. Zilva in reference to the fat richest of all others in vitamin A—namely, cod-liver oil. The discovery that this vitamin is destroyed by oxygen at elevated temperatures renders necessary a reinvestigation of the question whether vegetable oils are really destitute of the vitamin. Those on the market are; but here again processes of refining may be in part responsible for the result.

MALARIA IN ENGLAND.

THE malaria problem in England is interesting not only from the practical but from the historical point of view, and further light may be thrown upon it by a study of the part played by meteorology. This point was emphasized by Angus Macdonald,[2] who has published detailed temperature statistics for 1858–1860, the last occasion on which malaria is known to have prevailed extensively in England. The year 1858 was noteworthy for an exceptionally long and hot summer, the Registrar-General reporting: "The heat in June was so great that there was no instance since 1771 in which the mean temperature for that month had been exceeded." Malaria is indigenous in certain parts of England, and of the three English anophelines *A. maculipennis*, which is known to be present in nearly every rural district and in or near almost every town in England, is believed to be responsible for nearly all the cases of the disease. Since the war the interest in malaria in this country has naturally greatly increased, as many practitioners have had a large experience of the treatment of the disease both abroad and at home, and also because the danger of contracting it from the presence of relapsing cases among soldiers returned from the East caused the disease to be made notifiable. Statistics, moreover, show that no fewer than one army pensioner in every thirteen is being pensioned because of malaria. The influence of temperature and humidity on malaria in England forms the subject of a valuable paper by Brevet Lieut.-Colonel C. A. Gill, I.M.S., in the *Journal of Hygiene* of January last, following his investigations on the same subject in regard to India. He considers that relative humidity, being at all times favourable, plays little or no part in determining the seasonal incidence of malarial infection in England; but the temperature factor plays an important part, since it limits the period during which malaria may ordinarily be acquired in the United Kingdom to the months of July and August. To test the accuracy of this view Colonel Gill prepared a map of England, differentiating the areas having mean temperatures during July and August of (1) 62° F. or over, (2) 61–62° F., (3) 60–61° F., and (4) under 60° F. The distribution of temperature during the hottest months of the year, as measured by monthly mean temperature, was found to be in some respects peculiar, and differed from the distribution which on general grounds might have been anticipated. The area showing a mean temperature during July and August of 62° F. or over is extremely small, and comprises a strip of country in Essex and Kent on each side of the estuary of the Thames and the lower portion of the Thames valley. Included also is a strip of country in the south of Hampshire, near the New Forest, together with the eastern portion of the Isle of Wight. The towns of Brighton and Clifton also belong to this area. Area 2, which is much larger, extends on the south from near Dover to the west of Bournemouth, while the northern boundary runs obliquely across England from a point on the east coast of Norfolk to the Bristol Channel near Cardiff. The western boundary runs due north from near Bournemouth, then turns west and runs parallel to the Bristol Channel, and ends in the neighbourhood of Ilfracombe. Belonging to this area are small districts surrounding Torquay, Teignmouth, and Plymouth. Area 3 consists of a strip of country lying to the north of and parallel to Area 2 except in the east, where the northern boundary diverges so as to include an area in the south of Yorkshire. The estuary of the Dee and a small district along the north coast of Wales also belong to this area, while a district around Shrewsbury, the south coast of Devon, and three small coastal districts in Cornwall are included. Area 4 comprises the remainder of England and Wales with the exception of Manchester and Aberdovey, and the whole of Scotland and the whole of Ireland with the exception of the city of Dublin. In this area the mean monthly temperature during July and August—the hottest months—never normally reaches 60° F. During the period 1917–1919, 404 indigenous cases of malaria were discovered in thirty-nine different localities in the United Kingdom, according to the statistics of the Local Government Board and the Ministry of Health. On allotting to their respective areas the localities and the number of cases occurring in each, it is found that 40 per cent. of the endemic localities and no fewer than 86.6 per cent. of the cases are included in the extremely small zone of Area 1, while 40 per cent. of the localities and 10.4 per cent. of the cases are scattered throughout the larger Area 2. There are eight localities, or about 20 per cent., and 12 cases in Area 3, while no endemic localities and no cases exist in the rest of the United Kingdom. Of the thirty-nine endemic localities, seventeen are situated on the coast, and if those are included which are less than 100 feet above sea level and are at the same time in close proximity to the coast, no less than 65 per cent. of the endemic localities exhibit the climatic conditions prevailing in coastal regions during the summer. All the remaining inland endemic centres are in low-lying situations close to

[1] *Biochemical Journal*, 1920, xiv, p. 742.
[2] *War Office Observations on Malaria*. December, 1919.

river valleys or marshland, such as the Fen district. Colonel Gill suggests, therefore, that the precise location of the endemic centres of malaria in England within the area of favourable mean temperature may be partly explained by relative humidity. It has been shown by James that in a number of places in England which harboured many carriers and numerous anophelines no new case of malaria arose ("paludism *sine* malaria"), and also that some of the new cases recorded arose in areas which harboured only one to two carriers and exceedingly few anophelines ("malaria *sine* paludism"). Colonel Gill thinks that the explanation of these two conditions may be found in the part ascribed to the temperature and humidity factors, as it is clear that in England, if the temperature during July and August is unfavourable to the transmission of malaria, the local incidence of the disease will not be affected by the presence of many human carriers and numerous anophelines; while, on the other hand, in areas where the temperature and humidity factors are favourable, the transmission of infection will be apt to occur, provided one or two carriers are present together with relatively few anophelines.

ALEXIS SOYER.

UNDER the title "Alexis Soyer, a Chivalrous Chef," Captain J. S. Taylor,[1] Medical Corps, United States Navy, gives a full and interesting account of the self-sacrificing efforts of the leading chef in London, who had presided for ten years over the kitchens of the Reform Club when, in February, 1855, he volunteered to go gratuitously to organize the feeding of the patients at Scutari. This was not the first occasion on which he had shown his public spirit, for during the Irish famine of 1846 he conducted an open-air kitchen outside the Dublin barracks, where between four and five thousand people were fed daily at a nominal charge, and facilities were available for double that number in his kitchen near the South Union Workhouse. His name was familiar on account of his popular shilling cookery book, his *Modern Housewife*, and the "relish" he invented. When he got to the Crimean war zone, with his staff of eight assistants, he worked wonders, for not only were the diets transformed, but far-reaching economies were effected. He was the originator also of the Soyer stove, a common object in every military camp at the present day. Miss Nightingale, to whom he was devoted, subsequently wrote: "His death is a great disaster. Others have studied cookery for the purpose of gormandizing, some for show, but none but he for the purpose of cooking large quantities of food in the most nutritious manner for great numbers of men. He has no successor. My only comfort is that you were imbued before his death with his doctrines and that the Barracks Commission will now take up the matter for itself." At the conclusion of the war, before leaving the Crimea, he bought the wicker carriage which had been constructed for the use of Miss Florence Nightingale in her ceaseless errands of mercy throughout the widespread area occupied by the besiegers of Sebastopol and brought it to England, where it is still preserved. The "Great Soyer," as he was commonly known in the Crimea, must have presented a remarkable appearance in the costume he adopted; in a dialogue between the *Times* correspondent and John Bull, who was supposed to have visited the camp, the question was asked, "Who is that foreign officer in white bournous and attended by a brilliant staff of generals—him with the blue and silver stripes down his trousers, I mean, and gold braid on his waistcoat and a red and white cap? It must be Pelissier?" The answer follows: "That! Why, that's Monsieur Soyer, chef de nos batteries de cuisine." Thackeray is supposed to have portrayed him in *Pendennis* (1850) as Alcide Mirobolant, who conveyed his love messages to his employer's daughter, Miss Blanche Amory, in the language of culinary creations, but this would appear to have been a gross caricature of a noble personality.

[1] *United States Naval Medical Bulletin*, 1921, xv, No. 1.

OPHTHALMIC WORK IN EGYPT.

THE seventh annual report, for 1919, of the Ophthalmic Section, Department of Public Health, Ministry of the Interior, Egypt,[1] shows that the new patients numbered 76,525; nearly 50,000 operations were performed, and the total attendances of out-patients were 906,961. As the staff were short-handed during the year owing to the war, the work must have been very arduous, and the director, Dr. A. F. MacCallan, and his assistants are to be congratulated on the results of the year's working. The seasonal variations of the different organisms did not differ much from what has been observed and recorded in former reports; during the summer a vastly greater number of patients present themselves for treatment than in the winter. This is mainly due to the increased amount of acute conjunctivitis present in the summer; but neither atmospheric humidity nor differences in the level of the Nile seem to bear any relation to the increased incidence of conjunctivitis. Dr. MacCallan believes that flies do not play a great part in the transmission of eye diseases; he acknowledges that more light needs to be thrown on the habits of the flies of Egypt, and notes that an entomological investigation of these points is now being carried on there. The gonococcus is the main cause of the increase of acute cases of conjunctivitis, but it is curious that the upward trend of the gonococcal curve continues longer than that of the temperature; the maximum temperature is in July, while the summit of the gonococcal curve occurs in October. It is interesting to observe the marked differences between the gonococcal conjunctivitis of Egypt and that of Europe; in the latter the contagion is usually venereal in origin, but in Egypt it is acquired from eye to eye. In Egypt it is often met with in a subacute or chronic form, and the disease appears to be less destructive to the eye than is the case in England. Can these differences, the Director asks, be due to the fact that the organism of Egypt is not the gonococcus at all, or is it less virulent than the British gonococcus? An investigation of this question has been begun at Giza, and it is to be hoped that it may be continued. More than 12,000 patients examined during the year were found to be blind in one or both eyes, and 4,000 of these were completely blind. Signs of simple glaucoma were found in 2 per cent. of all cases seen during the year, the number of operations performed for this disease amounting to 749. Of senile cataract, nearly 1,500 cases were seen, but as so many of these eyes had been previously spoilt by the complications of trachoma and acute conjunctivitis, the number of extractions performed only reached the "modest" total of 364. Lastly, we may note that, as should be expected from the wealth of clinical material at its members' disposal, the Ophthalmological Society of Egypt is in a flourishing condition, and it has been affiliated to the Ophthalmological Society of the United Kingdom.

[1] The Seventh Annual Report of the Ophthalmic Section, 1919. By the Director of Ophthalmic Hospitals. Cairo: Government Press. 1920.

INTERNATIONAL RED CROSS CONGRESS.

THE tenth International Red Cross Congress was opened at Geneva on the afternoon of March 30th; the number of subjects set down for discussion is so large that it will be continued until April 8th. Reports on certain funds and on the allocation of the Nightingale medal will be presented by the International Red Cross Committee, which has arranged the order of business. Various questions arising out of the experiences during the recent war will be debated, in particular the insufficiency of existing conventions concerning prisoners of war (military and civil). Other subjects for discussion come under the general

heading of the relations of the various international Red Cross organizations to each other and to other philanthropic associations in peace as well as in war. The establishment of training schools for nurses and the organization of district nursing in peace will be discussed. A proposal will be made to revise the Geneva Convention in order to add to it a series of articles defining the status of ambulance aeroplanes and airships, and the protection which should be accorded to them when engaged in the transport of sick and wounded in time of war.

MATERNITY AND CHILD WELFARE CENTRES AND DAY NURSERIES.

IN view of inquiries from local authorities and others interested, the Ministry of Health has issued a revised list,[1] with index, of maternity and child welfare centres in England and Wales, including, for the first time, a list of day nurseries. The list contains the names and addresses of 735 centres and 140 day nurseries conducted by voluntary societies, and of 1,188 centres and 44 day nurseries conducted by local authorities. At about 150 of the centres special dental treatment is provided, while others have special arrangements for eye and ear treatment. The centres in the first part of the statement are primarily consultation centres for nursing mothers and children under 5, but some are fully equipped for ante-natal consultations. There are now separate lists for residential and non-residential institutions. The Ministry of Health advises that consultation centres should be reserved for healthy women and children, and that, where possible, treatment should be given at special treatment centres, which may be established at a hospital or combined with a school clinic, and may take cases from a number of consultation centres.

WE publish a Current Note in the SUPPLEMENT this week giving the dates on which the several two-day and one-day Scientific Sections will meet at the forthcoming Annual Meeting of the British Medical Association at Newcastle-on-Tyne.

WE regret to announce the death of Mr. R. J. Pye-Smith, F.R.C.S., Consulting Surgeon to the Sheffield Royal Hospital and Emeritus Professor of Surgery in the University of Sheffield.

WE have to announce also the death of Dr. R. Murray Leslie, physician to the Royal Hospital for Diseases of the Chest, which took place in London on March 29th.

Medical Notes in Parliament.

Maternity Welfare Administration.

Statement by the Minister of Health.

IN the course of the debate on the Consolidated Fund Bill, on March 22nd, Dr. Addison took up questions as to the position of the Government in regard to recommendations of the Washington Convention as affecting maternity welfare. Under Article 405 the authority to determine whether legislation should be initiated was the Crown and its executive. If the matter did not rest thus it would mean that a body meeting in Washington could compel the British Government to submit legislative proposals to Parliament against its desire. If the Government submitted proposals, the action must carry the assumption that the Government approved of it. On the other hand, members were aware that an opportunity would arise, and had practically arisen, for attention to be called to the decision of the Government. The proposals of the Washington Convention were that the Government should provide for the six weeks preceding and the six weeks following confinement; that during the first-named six weeks the woman should be compelled to be absent from work, and that during the six weeks following confinement, and while she was absent from work, the woman should be paid out of the public funds, or by a system of insurance benefits should be paid sufficient to provide for full maintenance, free attendance, and for a doctor or a certified midwife. These were the recommendations relating to employed women. There was in our own country a system doubly capable of dealing with these questions. They had an Insurance Act which provided maternity benefit for women who were themselves workers or the wives of employed contributors. They had parallel with that, and administered by local authorities, a system for giving assistance, advice, and so forth in connexion with maternity and child welfare generally. The Washington recommendation would cut right across that system, which had been gradually built up in this country far in advance of what had been done in any other country. That was one reason for not adopting the recommendations. The British Government had acted in advance of these recommendations with singular success and with much greater economy than such proposals would permit. In this country there would be 400,000 women who would be eligible for these benefits. The British system provided that not only the women employed, but the wives of employed contributors, although not themselves employed, should benefit. The Washington recommendations would automatically exclude 3,540,000 women who were the wives of insured persons but not themselves employed contributors. The recommendations would be applicable to only about one-ninth of the married women of a particular class in our country. The Government had done something for the remaining eight-ninths. If the recommendations were adopted and applied to the employed women only they would cost about £1,700,000 a year. A system of this kind could not conceivably be limited to this small section of women of the industrial classes. It could not properly be limited to employed women only, and this was of an impracticable character. So soon as the system was in operation the working man whose wife did not go out to work would say, "My wife is as much entitled to this benefit." That would apply to eight-ninths of the married women of this country, and would cost an additional 15 millions sterling. He did not think, in view of our other services, the country required an expenditure to anything like such an amount. A table which he had supplied to Captain Elliot showed that the average expenditure for maternity and child welfare was rather less than a penny in the rates, and the total provision out of the Exchequer was rather less than 1s. 5d. in the £. The total from the Exchequer was about £900,000, and the total for all authorities a little less. There was now established a great system of maternity and child welfare centres throughout this country—nearly two thousand of them, with about 3,500 trained nurses and visitors. They had established a large number of maternity beds in houses where women who lived under bad conditions could be properly attended to on payment of a nominal fee. It was a system which had developed on lines quite different from those of the Washington Convention. The results were brilliant; no other word was adequate to describe them. During the past two or three years there had been a conspicuous absence of a bad epidemic; people had been better fed than before, and since the war there had been a greatly awakened conscience on these matters. He asked the House to note the child death rate for London. In 1913 it was 106; in 1917 it was 104; in 1918 it was 108. In 1919 the rate fell to 85 and in 1920 to 75. The child death rate for the greatest city in the world had been brought down in that remarkable way.

Mortality from Tuberculosis.

Dr. Addison, on March 23rd, informed Captain Elliot that the total deaths during the past six years (from 1915-1920 inclusive) from all forms of tuberculosis were as follows: 54,295, 53,858, 55,934, 58,073, 46,312, 42,545. The death rate per hundred thousand of the population for the same years were as follows: 151.5, 152.9, 162.4, 169.4, 125.8, 112.8. The figures for the last two years were the most encouraging we have had since the inception of the national scheme for the treatment of tuberculosis.

University of London Site.—Sir W. Davison asked, on March 24th, whether the agreement by the Government to purchase from the Duke of Bedford some eleven acres at the rear of the

[1] Obtainable from H.M. Stationery Office or through any bookseller. Price 2s. net.

British Museum was made by the duke conditional on the land being used for the erection of new buildings by the University of London; whether there was a clause that, in the event of such buildings not being erected by April, 1926, the duke should have an opportunity of repurchasing the property at the price which had been paid for it by the Government; whether the Government were consequently precluded from using the site for any other purpose than for the erection of university buildings; whether the site had been definitely purchased by the Government subject to the above-mentioned restrictive covenant; and whether a copy of the agreement would be laid on the table of the House of Commons. Mr. Baldwin replied that the agreement contained a clause under which, if before April 1st, 1926, the Government gave notice that they found it impossible to use the property, the vendor would have an option to repurchase it for the price given, and if he did not exercise the option, the restriction of the use of the site for the purpose of the university would be removed. It was therefore not the fact that the Government would be precluded from using the site for any purpose other than that of university buildings. Mr. Baldwin promised to inquire whether the duke's trustees would have any objection to the presentation of the agreement. Sir W. Davison asked if it were not a fact that the Government was precluded from using the site for other than university purposes seeing that the duke had an option for repurchase if it were to be used for other than university purposes. He repeated the question whether the site had been actually purchased. Mr. Baldwin said he thought that it had been purchased. If the duke repurchased, the question of use for other than university purposes would not arise. If he did not repurchase the Government would not be precluded. In the improbable event of the abandonment of the scheme it would be for the Government of the day to determine whether to dispose of the site or to devote it to other purposes. Sir W. Davison asked whether the Minister of Education was aware that in his letter to Lord Rosebery the statement was definitely made (in urging the university to give an early reply) that in the event of the university not requiring the site it was required for other purposes, would it be stated for what other purpose the Government required a site of eleven acres? No reply was given.

Propaganda to Check Venereal Disease.—Dr. Addison, replying to Captain Elliot, on March 23rd, said that in accordance with the recommendation of the Royal Commission on Venereal Diseases, the National Council for Combating Venereal Diseases had been recognized by the Government since 1916 as the authoritative body for the purpose of spreading knowledge and giving advice in regard to the question of venereal diseases in its varied aspects. During the years ended March 31st, 1919, and March 31st, 1920, grants were made to the National Council from the Exchequer amounting to £13,000 and £15,000 respectively, and the grant up to date during the current financial year amounted to £13,750. These grants had been paid in respect of expenditure incurred by the National Council in connexion with a campaign of publicity and education, by means of lectures, meetings, exhibitions, and press advertisements, and by pamphlets, posters, and other literature. The grants for the current financial year included a proportionate sum for administrative expenditure. No grants were made direct by local authorities to the National Council; but some of these authorities had made contributions to the local branches of the Council in aid of propaganda and educational work undertaken by those branches. Captain Elliot asked whether, in view of the recent recommendations of the Birth Rate Commission, the Minister of Health would see that steps were taken to persuade the two societies engaged in the campaign against venereal disease to co-operate instead of pulling in different directions. Sir J. D. Rees: Will the right hon. gentleman in this matter regard with suspicion the reports of a profession which has reported that victorious England has a C3 population? Dr. Addison could not agree with the generalizations. He had done everything he could to get the two different bodies to work together, and was continuing to do so.

The Waiting Work of Appeal Tribunals.—The Attorney-General, on a question by Lieut.-Colonel Sir F. Hall, on March 21st, said that pensions appeal tribunals were distributed in various large centres in England and Wales (including London) according to the number of cases to be dealt with in such centres, this number varying from month to month. Since February 28th six tribunals had been sitting in London. Approximately 3,000 cases await hearing in London; of these 1,565 have been received by the tribunals during the last month. Up to the present time the average period elapsing between the date on which an appeal was received by the tribunal and the date on which it was listed for hearing had been (he understood) six weeks. Steps for setting up additional tribunals were under consideration.

Appeal Tribunal Cases.—Sir Gordon Hewart stated on March 22nd, in reply to Mr. Gwynne, that the total number of cases awaiting hearing by the pensions appeal tribunals for England and Wales was 7,850, of which approximately 600 were cases in which the appellants had already been afforded one or more opportunities of having their cases heard but had failed to attend. The tribunals for England and Wales were hearing cases which reached them at the end of January and in the early part of February last. Two extra tribunals had recently been set up, and owing to the continued large increase in the number of cases received, the appointment of further tribunals was under consideration.

Coroners' Remuneration Bill.—Mr. Lloyd George, on March 24th, informed Major Steel that the Government did not oppose the second reading of this bill, but it must take its chance with other private bills.

Ex-Service Cases in Lunatic Asylums.—On an inquiry raised by Mr. Raper, on March 23rd, as to the detention of an ex-service man in Claybury Asylum, Dr. Addison said that the patient was interviewed by a medical commissioner of the Board of Control and a medical officer of the Ministry of Pensions, and it was decided by the Ministry of Pensions after the fullest consideration that the man had not yet sufficiently recovered for removal to a neurological hospital. There were about 4,673 ex-service patients in asylums in England and Wales, and their mental condition was constantly under review. Mr. Raper put it to Dr. Addison that as recently as December 3rd he had informed the House that so far as he could find out there was no definite information as to any ex-service men suffering from shell shock being kept in pauper lunatic asylums. Dr. Addison believed the statement was still correct, but shell shock did not include all forms of mental disability. It might be that this man was originally sent to the asylum as suffering from shell shock.

Blind Persons Act.—Mr. G. Edwards asked, on March 24th, whether instructions had been given by the Customs and Inland Revenue to pension officers to oppose the grant of any pension in the absence of a certificate of blindness from an institution for the blind or other similar body; whether, in fact, any certificate from a medical man or other satisfactory evidence was not sufficient to justify the grant of a pension; whether the attention of the Ministry of Health was called to this matter by the Norfolk Local Pensions Committee in November last, with special reference to cases where medical certificates had been obtained stating that the claimants were too blind to do any work for which eyesight was essential; but nevertheless the pension officer had opposed the grant of a pension. Dr. Addison said that it was in pursuance of regulations made under Section 10 of the Old Age Pensions Act that the instructions for carrying out the Old Age Pensions Act were framed. These instructions required the pensions officer, in the absence of a certificate from an institution for the blind or similar body, to appeal against the allowance of any claim unless he was personally satisfied that the claimant was totally blind. Arrangements had been made in the Ministry of Health for assessing any medical evidence which was produced by the claimant, and, where such evidence was lacking or inconclusive, for medical examination of the claimant. He had received representations from the Norfolk Pensions Committee such as was indicated in the question and was looking into the whole matter.

Optical Glass Industry.—The position of the optical glass industry has been the subject of careful consideration in connexion with the proposed bill in the safeguarding of certain industries. This was stated by Sir Philip Lloyd Greame on an appeal that the trade should be made "a key industry."

Opium Cultivation in China.—Replying to Sir J. D. Rees, on March 23rd, Mr. Montagu said it was not proposed to make any change in the opium policy of the Government of India as a result of the recrudescence of poppy cultivation in China. The matter was now governed by the Hague Convention, under which as China had prohibited the import of opium, India was bound to prevent the export of Indian opium to China. Sir John Rees put it that the prohibition by China of the import of opium was merely an empty form. Mr. Montagu said the matter would be discussed by the Opium Advisory Committee of the League of Nations at the forthcoming Congress in Geneva.

Condensed Milk: Draft Regulations.—Dr. Addison said, on March 24th, in reply to Mr. Doyle, he understood that the standards recommended by the Committee were not substantially different from those which were advocated by the majority of trade witnesses, except in the case of full-cream unsweetened, where a somewhat lower standard had been adopted. He was prepared to publish the Committee's report if there was any general desire for it.

Grants for Health Services.—The grants paid to local authorities in London during the last completed year in respect of health services were as under: Tuberculosis, £49,195; maternity and child welfare, £39,763; venereal disease, £35,543; total, £124,501. The total expenditure in all these services combined was 2¼d. out of an average rate for London of 14s. 5d. for the year.

The Easter Recess.—The House of Commons was adjourned until Monday, April 4th.

THE annual meeting of subscribers of the Cremation Society of England will be held at the new address of the offices of the society, 52, New Cavendish Street, W., on Wednesday, April 13th, at 3 p.m., to consider the annual report of the Council and elect office-bearers for the ensuing year. The valuable work of the Cremation Society was noted in our issue of February 12th. Among the distinguished personages reported by the Council to have been cremated during the past year were Sir William Osler, Sir Robert Morant, Dr. Cecil Lyster, Sir Henry Burdett, Sir Charles Matthews, Admiral Lord Fisher, and Lord Glenconner.

England and Wales.

A SURVEY OF SURGERY.

IN an address to the students of the Leeds Medical School, on March 15th, Sir Berkeley Moynihan sketched the romance of the art of surgery from 2000 B.C. down to the present day. There was evidence, he pointed out, that such operations as circumcision and trepanning were practised more than two thousand years before Christ. Beyond these, however, nothing of any consequence was done surgically until the time of Hippocrates, who was born 460 B.C. After Hippocrates there was a big gap before any other notable figure appeared, and then there was Celsus, a dilettante patrician, who probably therefore did not practise medicine, but was merely a recorder of the work of others. Galen was the next great figure, and for nearly 1,500 years after him practically no progress was made. Then came the period of the anatomists; the real father of anatomy in modern times was Mondino, who lectured in Padua in 1315. Then there was Sylvius who inspired Andreas Vesalius, the greatest anatomist of all time. Another big gap in the progress of surgery followed, because nobody knew anything about pathology. The man who laid the foundation of modern surgery, himself the greatest of surgeons, was "that cantankerous, red-headed little Scotchman" John Hunter. He and Morgagni built the solid foundation of pathology on which the modern edifice of British surgery had been erected. But the world waited for something to make surgery safe, and it came with Pasteur. The revolution that had been wrought in modern surgery was due to Lord Lister, and to him alone. Lister had saved more lives than all the wars of all the ages had thrown away. All the modern operations owed their existence to the work which Lister did. There had been greater surgeons during the last thirty years than in all the centuries which preceded that period, and that was all due to Lister. In conclusion, Sir Berkeley Moynihan said that to-day the view prevailed that surgery had reached her destiny, and was now almost a finished art. He believed it was true. He did not believe that the mortality percentage would ever be much smaller than it now was, but he regarded that not as an end, but as a beginning. The surgery of to-day must not be considered as bearing only upon the art of surgery; it was an art which allowed for the discovery of the reasons why, in the whole science of medicine. They could look on it now as the key which had been made to unlock a great many closed doors. It was only just beginning its true function.

LEEDS UNIVERSITY.

The University Council has appointed Mr. R. J. Stewart McDowall, M.B., Ch.B.Edin., to the post of lecturer in experimental physiology and experimental pharmacology. During the war Mr. McDowall served overseas with the R.A.M.C. for nearly four years, of which two and a half were spent in the Sinai desert. Since demobilization he has been working under Sir E. Sharpey Schafer in the Physiology Department of the University of Edinburgh, and is lecturer in that department and clinical tutor in medicine at the Edinburgh Royal Infirmary.

FAREWELL DINNER TO DR. ALEXANDER STOOKES.

A representative gathering of Liverpool obstetricians and gynaecologists, with Professor Henry Briggs in the chair, entertained as their guest Dr. Alexander Stookes at dinner at the University Club on March 19th, on the eve of his departure from Liverpool to reside in Devonshire. Under the age limit Dr. Stookes has this year retired from active public professional service, which began in 1895 at the Maternity Hospital and in 1899 at the Samaritan Hospital for Women. In both hospitals as a surgeon he has done admirable work. After dinner appreciative references to Dr. Stookes and his work were made by Mr. Adam G. Rankine, Dr. T. R. Bradshaw, Dr. Glynn Whittle, Professor Wilberforce, Dr. Frances Ivens, Mr. T. H. Bickerton, Dr. Blair Bell, and others. The Chairman, on behalf of those present and of friends in Manchester, Leeds, and Sheffield, who subscribed to the gift, presented Dr. Alexander Stookes with a cheque. Dr. Stookes, in expressing his grateful thanks, spoke with confidence of the younger generation, whose advancement should be assisted by the retirement of the seniors in due season. He had passed through many happy days in Liverpool, and he looked forward to many more in Devonshire. It was a source of delight to know that he took with him the good wishes of so many friends. At the close of the happy evening Miss Ivens proposed the health of the Chairman. The secretarial duties of the dinner were ably carried out by Dr. Norman B. Capon.

INSTITUTIONAL TREATMENT OF TUBERCULOSIS.

The Public Health Committee submitted to the last meeting of the London County Council a report on the treatment of tuberculosis in London, particularly with regard to the method of selection of patients for institutional treatment, the regrading of the institutional accommodation available, and after-care. It has been found desirable that all patients recommended for institutional treatment, whether insured or uninsured, should if possible first pass through a period of observation in hospital beds, and the reservation of 250 such beds at the Brompton Hospital and of 75 at the City of London Chest Hospital has been arranged. The patients occupying these beds will be watched by the tuberculosis officers of the staff of the county medical officer. The average duration of stay in the observation beds will be from two to four weeks. The value of the observation bed is stated to have been confirmed by an observation of 158 cases sent for diagnostic purposes during 1920 to the hospitals just named. Of this number, 124 (78 per cent.) were reported as not suffering from tuberculosis, and of the 34 cases diagnosed as tuberculosis 10 were considered to be arrested cases not requiring active treatment. The total provision of institutional accommodation, including these observation beds, is for 2,550 beds — 1,800 for adults and 750 for children. The 1,800 adult beds are graded into observation and emergency beds, beds for early cases, for moderately advanced cases, for far-advanced cases, for surgical cases and for training. The number of beds for early cases (300) is reduced in conformity with the stricter definition proposed by the Ministry of Health of what should be regarded as a true sanatorium case; the moderately advanced cases (500 beds) are selected patients who have been found by careful observation to be likely to gain material benefit from institutional treatment; the provision for far-advanced cases (400 beds) is subject to alterations made by boards of guardians and the Metropolitan Asylums Board; the 100 training beds are at farm colonies and similar institutions, and are provided only for ex-service patients. The estimated expenditure on the tuberculosis service for 1920–21 is £632,970, of which rather more than one-third is borne by the rates. Representations are to be made to the Ministry of Health as to the desirability of instituting an inquiry into the steps which should be taken to provide suitable employment for tuberculous members of urban populations, and as to the importance of an early decision upon the constitution and functions of care committees. It may be noted that the Greenwich Borough Council proposes to establish, under the medical supervision of the tuberculosis officer of the local dispensary, a centre for the training and employment of tuberculous patients in suitable occupations.

SOUTH-WESTERN OPHTHALMOLOGICAL SOCIETY.

A meeting of the South-Western Ophthalmological Society took place at Bristol on March 9th, and was fairly well attended. In spite of the large area covered by the society members were present from Plymouth, Newport, Weston-super-Mare, and other districts. Cases were shown at the Bristol Eye Hospital in the morning, and after lunch Mr. R. J. Coulter opened a very interesting and rather heterodox discussion on "Some squint problems." He made a demand for a simpler operation than is at present customary. The honorary secretary of the society is Mr. E. H. E. Stack of Bristol.

VENEREAL CLINICS ARRANGEMENTS FOR LONDON.

At the meeting of the London County Council preceding the Easter recess sanction was given to a renewal of the arrangements for the diagnosis and treatment of venereal diseases in London. For the last four years the Council has joined with certain neighbouring county and county

borough councils for the common utilization of the facilities afforded by a number of the London hospitals. The scheme has been found to work well, but the Council now desires to make modifications in it without the delay incurred in obtaining the consent of all the participating authorities. During the past year the number of patients' attendances has been 430,000, a considerable increase on previous figures. A venereal clinic has been opened at the Royal London Ophthalmic Hospital, the first to be established at an ophthalmic hospital in London. The estimated expenditure of the Council and all the participating authorities for the coming year is £126,583, of which three-fourths are met by Government grant. No increase is proposed in the amounts—£3,500 and £5,000 respectively—allocated for publicity arrangements and for drugs. A joint inspection of the clinics has recently been undertaken by Dr. F. N. K. Menzies and Brevet-Colonel L. W. Harrison, and a report is to be made to the Council at an early date on the extension of the facilities and increase of efficiency of the clinics.

Scotland.

Tuberculosis Schemes in Edinburgh.

At a meeting of the Edinburgh Town Council last week a long discussion took place on a recommendation of the Public Health Committee to terminate the arrangement as to consultations with Sir Robert Philip and Dr. James in connexion with the city's tuberculosis scheme. A letter was read from the secretary of the university protesting against any undue haste in deciding a matter which might affect the interests of the university. It appears that the agreement made in 1914 provided that, in the event of the university establishing a chair of tuberculosis, the city corporation would give all reasonable facilities for teaching in connexion with the work carried on in the corporation's hospital, dispensary, and farm colony, and for the purpose of research. The university did establish a chair of tuberculosis and Sir Robert Philip was appointed professor. The Public Health Committee would appear to have been moved to terminate the agreement with Sir Robert Philip to act as consulting officer by the fact that experience showed that the occasions for making use of his services were few or none. A letter was also received from the Royal Victoria Hospital Trust asking that more time might be allowed for consideration, and this view was supported by the Lord Provost. Eventually, however, the recommendation of the Public Health Committee was adopted by 22 votes to 14. As the matter stands at present it would seem that the corporation and the Edinburgh Insurance Committee, which contributed to the cost, will cease to have the advantage of the services of Sir Robert Philip and Dr. James as consulting experts, but that the professor of tuberculosis in the university will continue to enjoy facilities for teaching and research at the institutions maintained by the corporation for tuberculosis.

Meat Inspection in Scotland.

A report by Lieut.-Colonel Leighton, Medical Officer (Foods) Scottish Board of Health, on the subject of a uniform system and standard of meat inspection in Scotland has been now issued.[1] This report (which also embodies the reports of three committees of experts appointed by the board to assist Colonel Leighton in his inquiry) is of importance to public health officials and others interested in the subject of meat inspection and its bearing upon the health of the people. A survey is made of the conditions obtaining throughout Scotland in connexion with the administration of slaughterhouses and the inspection of carcasses, and these conditions are subjected to critical examination. The reports of the three committees deal respectively with (*a*) problems of general administration, (*b*) difficulties peculiar to rural areas, and (*c*) proposals calculated to secure uniformity in methods of inspection and in standards of judgement. The latter contains a complete scheme of instructions to meat inspectors as to the method of procedure to be followed in the examination of carcasses and the standards to be observed in the passing or condemnation of the meat. This is the first scheme of the kind that has been drawn up and published in the United Kingdom.

[1] To be obtained direct from H.M. Stationery Office, 23, Forth Street, Edinburgh, or through any bookseller, price 4s.

Post-Graduate Medical Teaching in Glasgow.

For many years post-graduate instruction in medicine has been given in several of the hospitals in Glasgow, but it was only in the early part of 1914 that a special endeavour was made to bring together all the institutions and hospitals for the purpose of organizing a permanent comprehensive scheme of post-graduate teaching for Glasgow as a whole. Owing to the intervention of the war little progress was made until 1919, when an emergency post-graduate course was organized and carried on in the summer and autumn. The course was highly successful and the committee in charge felt justified in recommending that a permanent scheme should be instituted. Such a scheme was adopted on March 2nd, 1920, at a joint meeting of the Faculty of Medicine of the University of Glasgow and the General Committee for Post-Graduate Medical Teaching which had been appointed in 1914. The various teaching institutions and teachers taking part in the scheme constitute an association the business of which is managed by a board elected periodically by them. The chairman of the board is Principal Sir Donald MacAlister, K.C.B., M.D., and the vice-chairman Sir Hector C. Cameron, C.B.E., M.D. To inaugurate the scheme the board arranged a series of weekly demonstrations for practitioners extending from November last till May of this year; the number of practitioners taking advantage of the series is satisfactory. For the ensuing summer and autumn the board has arranged a comprehensive course of instruction for medical practitioners extending from May till October. Most of the hospitals in Glasgow are taking part in it, and the classes as far as possible have been arranged so that a practitioner, if he so desires, may occupy the greater part of each day in attending classes. The classes are open to all qualified medical practitioners, and will be conducted independently of the undergraduate courses. A practitioner may enrol for one or several classes, and may attend for one or more months as desired. These classes have been specially designed to meet the needs of general practitioners, but the board has also had in view the provision of facilities for young graduates and others who may wish to obtain a closer acquaintance with hospital work in one or other of its branches and who are prepared to give the necessary time. Arrangements have been made whereby a limited number may become attached to wards or out-patient departments as clinical assistants for definite periods in children's diseases, mental diseases, tuberculosis, or venereal diseases. They would work under the direct supervision of the physician or surgeon in charge and carry out such detailed investigations as directed. It has long been felt that Glasgow, in the midst of such a vast industrial population, with its abundance of clinical opportunities, should become one of the leading centres of post-graduate medical teaching. The Board of the Glasgow Post-Graduate Medical Association presents to the medical profession this year its first organized scheme of teaching. Syllabuses giving full information concerning the classes and clinical assistantships may be had on written application to Dr. A. M. Kennedy, Secretary, Post-Graduate Medical Association, University, Glasgow, or by applying personally at the various hospitals which are taking part in the scheme.

Glasgow Cancer Hospital.

At the annual general meeting of the Glasgow Royal Cancer Hospital on March 23rd, Sir George T. Beatson, senior surgeon to the hospital, presided. After referring to the decision of the directors to reopen the chemical branch of the research department, which was closed during the war, and pointing out that the funds of the research department were kept separate, he strongly appealed to the public for financial support. Like other voluntary hospitals, they had suffered from the stress of war conditions. The annual report stated that during the year the directors had seen their way to reopen the research department on a working basis again, but the work to be carried on would be confined to the chemical department of research. In

connexion with the biochemistry of cancer, they had appointed Mr. A. N. Currie to carry on certain investigations. At present this was the only branch of research that funds allowed of restarting, but it was a very important department. Of the 128 cases treated in 1920, 57 were males and 71 females. During 1920 there were 66 deaths in the hospital—31 males and 35 females. The majority of the 128 cases were inoperable, but for some of them surgical operative measures were possible and of a hopeful nature. In the treatment of the inoperable group radiation had been the procedure mainly relied on, and this had been carried out by x rays rather than by those of radium, whose field of application was being more narrowed down as experience was gained in its use. The hospital was indebted to the West of Scotland Radium Committee for a supply of radium emanations for treatment.

Maternity and Child Welfare.

At the annual meeting of the Lauriston Home for Maternity Rescue Work, Edinburgh, held on March 15th, the annual report was presented by Dr. J. Haig Ferguson. Sheriff Crole, K.C., who took the chair, after discussing the need for such a home, remarked that the Carnegie Trustees had some time ago offered to establish a centre for child welfare and maternity work. Nothing had yet been done, but the offer was still open, and some of those who were interested in the matter were prepared to formulate a scheme for submission to the trustees. In giving an outline of the proposals, the chairman said that the Lauriston Home would form an integral part of the scheme, and he suggested that something might be done under the joint auspices of the University of Edinburgh, the Town Council, the Royal Infirmary, and the Royal Maternity Hospital. A better maternity hospital was needed, and the present building might be made use of in connexion with the proposed child welfare scheme.

Correspondence.

THE MINISTRY OF HEALTH MEMORANDUM ON ENCEPHALITIS LETHARGICA.

Sir,—I fear that a slip in proof reading, for which I accept responsibility, led to the date 1658 appearing in this memorandum with its last two figures transposed, and also to the name of Ozanam being printed as Ozanann. I should be glad for space to thank Dr. F. G. Crookshank for both corrections and for his historical notes.

Dr. Crookshank's other criticisms of the memorandum are governed by his opinion of the stress which should be laid on the association of encephalitis lethargica with influenza. In objecting to the statement that "no direct relation has been established" between these two diseases, he seems, however, to read more into the words quoted than the ordinary reader would be disposed to do. Typhus and relapsing fever—to take an instance where the facts are much better known and proved—are both spread by the same agency of infection, while epidemics of the one are often most closely associated, both in time and in locality affected, with epidemics of the other. This does not, however, make it incorrect to say that no direct relation exists between typhus and relapsing fever; they are distinct pathological processes, and either disease can occur independently as an epidemic.—I am, etc.,

Whitehall, S.W., March 26th. G. S. Buchanan.

Sir,—It appears, on further inquiry, that the paragraph of the Ministry of Health's recent memorandum lately criticized by me in your columns (March 26th, p. 478) is really the *imago* of a paragraph to be found in Dr. Bassoe's paper on "Epidemic encephalitis," printed in the *Journal of the American Medical Association* for April 5th, 1919.

Dr. Bassoe, who makes no claim to historical authority, derived his information from an intermediate source, and selected his references, not so much with a view to proving the anterior occurrence of encephalitis lethargica, as to showing the epidemiological relation between prevalences of encephalitis and of influenza.

It is therefore the more surprising that the Ministry, while copying Dr. Bassoe's paragraph and adopting literal inaccuracies therein, should have added the grossly incorrect allusion to Willis and suppressed Dr. Bassoe's pointed and valuable references to "grip" and "fièvre catarrhale."

Had these references been not suppressed, the paragraph would have been far less exposed to criticism. But then the tenure of the official attitude concerning influenza and epidemic encephalomyelitis would have required no little dexterity.

It is, I think, in the true interests of epidemiological research that attention should be drawn to the manner in which this recent memorandum of the Ministry has been prepared, for much in it is open to substantial criticism besides the points to which I have alluded.—I am, etc.,

London, W., March 23rd. F. G. Crookshank.

ACIDOSIS AND ALKALOSIS.

Sir,—Dr. J. S. Haldane's review on the physiology of respiration, renal secretion, and circulation is of great interest; but I do not think he quite does justice to many workers in this field when he charges them with "failing to interpret rightly a diminution in the so-called 'alkaline reserve' of the blood," and, further, states that they had quite wrongly identified diminution in "alkaline reserve" with acidosis. No worker, so far as I know, has really confused the alkaline reserve of the blood with its hydrogen ion concentration. The confusion, if such exists, is purely a question of terminology.

Naunyn introduced the term "acidosis" for the formation in metabolism of large amounts of non-oxidizable organic acids (I quote from Magnus Levy's article in Von Noorden, *Path. des Stoffwechsels*, 1906, i, p. 189). Oxybutyric acid formed the most notable example, but the excretion of lactic acid in diseases of the liver was considered one of several other examples. In this use of the word there was no suggestion that oxybutyric acid necessarily acted by making the blood acid; in fact, controversy raged for many years as to whether coma was produced in this way, or whether the acids were poisonous in themselves. It is fairly certain now that the latter is the correct alternative, aceto-acetic acid being the poisonous substance.

Barcroft was, I think, the first to give a more precise meaning to the term acidosis, being one of the earliest, if not the first worker, to investigate physiological conditions where it was necessary to draw a distinction between the alkaline reserve of the blood and its hydrogen ion concentration. He states (*Respiratory Function of the Blood*, 1914, p. 227):

> Here let me explain my use of the word "acidosis" in reference to the blood. In the following pages it will signify the appearance of acids (exclusive of CO_2) abnormal in kind or perhaps only in quantity in the blood, or even a decrease in the bases present. By acidosis, then, I mean an increase of acid relative to basic radicles in the blood, CO_2 not being considered. By the term acidosis I will signify nothing concerning the final reaction of the blood, which is largely regulated by the amount of CO_2 present.

This was a natural extension of the meaning of a word which had been in general use for years previously. This definition was quoted in full and accepted by Hasselbalch (1916) and by Peabody in America in an early review of the subject, and it has been generally adopted up to the present time. The more explanatory, but at the same time more cumbersome, phrase, "diminished alkaline reserve," was introduced by Van Slyke and Cullen in 1917.

Recently, Dr. J. S. Haldane and Professor Benjamin Moore have used acidosis as signifying increased hydrogen ion concentration, and alkalosis as diminished hydrogen ion concentration of the blood.

Such a variation in the definition of a term is of no importance to a man working at the subject, as he soon realizes in which particular sense an author is using it; but it is very confusing to others, and it was in the hope of simplifying the position that, at the last meeting of the Physiological and Pharmacological Section of the British Medical Association at Cambridge, the suggestion was made, and was favourably received, that increased and diminished hydrogen ion concentration should be known as "acidaemia" and "alkalaemia" respectively, and that diminished and increased alkaline reserve should be known as "acidosis" and "alkalosis."

The point I would urge is that the actual nomenclature is of no importance, but let us all use the same one. If we

use "acidosis" and "alkalosis" in Dr. Haldane's sense, can he supply us with a short expression for "diminished alkaline reserve"? It would be as well if some authoritative body gave us a lead. I am sure we should all be prepared to follow it.—I am, etc.,

Woldingham, Surrey, March 19th. E. P. POULTON.

GLANDULAR FEVER.

SIR,—Drs. Letheby Tidy and Morley are to be congratulated on the timely appearance of their article on this disease. I think it will be found to appeal to a large number of practitioners in this district (West Riding), and possibly in many other places, by enabling them to label definitely what I think has been a large—possibly very large—number of examples of the disease.

In consulting practice naturally one does not see many of these cases, but I have been interested in them for the past two years, during which period I have seen at least a dozen, mostly the children of doctors or cases in which, from the characteristic debility and tardiness of convalescence, the slow involution of the (often considerable) glandular enlargement, and the marked tendency to relapse, the question of tuberculous adenitis has been raised. But I have made a point of comparing notes with a large number of practitioners, from which I derive the impression, amounting to a practical certainty, that we have had in the towns of this district not inconsiderable epidemics of the disease. I hope very much that some of those who have had this experience will send a brief note to the JOURNAL, for only in this way can we get a really complete view of the disease. General practitioners are as a rule too busy to make many contributions to medical literature (to our great loss), but I shall be very much surprised if many do not confirm what I have stated, and say that an "unusual epidemic of sore throat with tedious and considerable glandular enlargement" has been a recent feature of their practice.

I am personally satisfied that the disease is one *sui generis*, and, in typical cases, presents no difficulty in diagnosis. I should be inclined to emphasize the frequency of some complaint of "sore throat," referred either to tonsils or pharynx, but in which the loca changes, as revealed by inspection, are slight. The proportional affection of adults is also another interesting point.—I am, etc.,

Leeds, March 28th. W. H. MAXWELL TELLING.

SIR,—I was very interested to read in the JOURNAL of March 26th the article on glandular fever by Drs. Tidy and Morley. The authors state that there is some reason to believe that a considerable number of cases are occurring at the present time, so it may be of interest to state that recently (from mid-February to mid-March) I have seen in this district nine cases of this nature. All of these patients were between the ages of 4 and 13 years; seven were in separate houses (most of them were isolated at once), and the remaining two were in the same house, one of these occurring six days after the first. I heard later that the mother in this house was ill nine days after the commencement of the first child's illness, and was in bed for two days with feverishness and swellings behind her ears. Seven of the cases were mild and the remaining two severe; one of the latter was complicated by nephritis, and there was definite oedema of ankles (Drs. Tidy and Morley state that there is no previous record of the occurrence of oedema). In this case all signs of nephritis had disappeared twenty-five days after the onset of the disease. The glands affected were the cervical beneath the sterno-mastoid muscles, and I found no other glandular enlargement. In eight of the nine cases the enlargement was bilateral; the glandular swelling was generally rather larger than a walnut, and there was comparatively slight tenderness. In every case the throat appeared normal. In one case a slight macular eruption appeared on the trunk on the sixth day; it caused some irritation and lasted two days. The temperature in no case exceeded 103° F.—I am, etc.,

R. D. AYLWARD, M.R.C.S.

Tunbridge Wells, March 28th.

X-RAY RADIATIONS AND CANCER.

SIR,—*X*-rays and radium are undoubtedly powerful therapeutic agents, but at present we fail to make full use of them, owing to the fact that we are as yet not masters of the technique necessary to get their full beneficial effect. Consequently most of our failures may be said to be due not so much to the fault of the agent as to the fault of the technique.

Our results are bound to be erratic until we know what are the conditions and dose necessary to produce a lethal effect on pathological cells, and at present they are to a great extent dependent on luck—that is, whether the particular dose administered happens to be the most effective one; and, secondly, on the practical experience of the radiologist himself. It ought to be possible not only to administer *x*-ray radiations with the same degree of accuracy as drugs, but to have some idea as to what prescription is required for the case in hand.

Dr. Reginald Morton has recently described a Continental method for deep therapy, and I have lately heard of yet another. Many of us can recall similar reports which before the war periodically found their way to this country from the same source, each in turn giving way to some newer idea. Consequently radiologists have become cautious about accepting without careful investigations these methods of "mushroom" growth. We must know on what foundation they are based—for instance, there is nothing to be gained by inventing ingenious apparatus for the production of large quantities of very penetrating rays unless we have some sound reason for thinking that this is the type of ray required.

Radiologists are divided into two schools—one striving for full cell absorption and the other for extreme penetration. The second class are endeavouring to obtain *x* rays as penetrating as radium, but I have yet to be persuaded that radium is of a greater therapeutic value than *x* rays properly applied, except, of course, in inaccessible positions; and I suggest the possibility that the therapeutic effect of radium may be due to something besides penetration. If we set out to produce skin reaction we use a medium or low type of ray without a filter, as this gives the greatest skin absorption in the shortest time. It is possible to get the reaction, however, even if we use a high-penetrating type of ray through a thick filter, but the exposure will be unnecessarily prolonged and nothing will be gained.

The same argument may be logically applied to deep-seated tissues—that to get our effect full cell absorption is necessary, and that by over-filtration we probably cut out the very rays that would have been absorbed by the pathological cells, and although to a certain extent this can be made up by prolonged exposure, the net result is the same. Until physicists alter their dictum that "*x* rays have no effect upon the medium unless absorbed by the medium," and this is backed up by the effect on the skin, it is wiser, I think, to work on the cell-absorption basis.

A large percentage of the cases of mammary carcinoma that pass through the *x*-ray department of the London Hospital die from metastases in the thorax or elsewhere in the body, while subcutaneous recurrences are controlled.

I have devised the duplex method of treatment installed in temporary quarters at the London Hospital with the idea of controlling general metastases in the same way as the more superficial. Any method devised for this purpose must fulfil two conditions: (1) It must be possible to administer a lethal dose to the pathological cells lying at various depths and in unknown positions; (2) the radiated area must be large.

The duplex method consists of two separate installations—one operating a tube in front and the other a tube at the back of the patient, both running at the same time. After the first full dose has been given, the direction is changed so that the radiation is now from side to side, the arms being forward and raised. In this way the deepest parts of the body are subjected to radiations from four points of the compass, and the resulting cell absorption must be much greater than with our present method. A large radiation field is used, including practically the whole trunk, this being attained by using the standard lead glass shield reversed. The duplex method, therefore, may be described as an elaborated method of cross-firing, differing, however, in two essentials from our present idea: (1) Both tubes are working at the same time from both sides of the body; (2) a very large area is covered.

These are the bare outlines of the method, which may be of value to those working on the absorption basis. From the statements made by some writers on the harmful effects of large doses of *x* rays, one may expect certain phenomena which are at present being watched for, but I feel certain that these can be avoided as long as the treatment is kept within certain limits, for I believe it is possible to give an overdose to the deeper structures in the same way as we can to the skin.—I am, etc.,

London, W., March 22nd. S. GILBERT SCOTT.

SIR,—If, in my letter published a fortnight ago, I gave the impression that my technique in pre- and post-operative *x* ray treatment was originally based upon the results of animal experiments, I did not intend to do so. The method rests upon the clinical experience of ten years—an experience, I hasten to admit, more largely concerned with breast cancer than with any other, although I have also treated a considerable number of cases of malignant disease of the uterus. What I meant to imply was that the experiments at the Rockefeller Institute, and those made by Professor Russ in this country, furnished an explanation for the success of a dosage which is certainly insufficient to "kill" a growth by direct action upon the cells.

I have been familiar with the laboratory results referred to only for about three years, and I have not in any way altered my technique because of them. They are, however, of great interest to me as tending to confirm views which I had formed as a result of clinical observation. But it is not too much to hope that in the future the laboratory may enable us, by repeated examination of the blood, to graduate our *x*-ray dosage according to the response on the part of the patient.

Dr. Finzi says he has seen a few cases in which small doses apparently stimulated a growth; I have seen a few cases in which very large doses apparently produced a catastrophe—that is, there was a *post hoc* relation.

I have been careful not to apply opprobrious terms to the Erlangen method, for I have found it a good rule to believe that whenever an earnest and intelligent body of men consistently advocate a particular method, there is something, and usually a good deal, in it. I have also learnt not to condemn a drug or therapeutic procedure solely because the theory on which its use was based, or by which its action has been customarily explained, is eventually shown to be false. I commend these rules to Dr. Finzi.

With regard to British apparatus, the 24 in. coil has been long available, and I have myself, as an experiment, run *x*-ray tubes in an oil bath up to a 16 in. equivalent gap.

As is very often the case in controversies, the two schools are not nearly so far apart as might at first sight appear. Thanks in no small degree to the pioneer work of Dr. Finzi ten years and more ago, every one admits now that a tube with an equivalent spark gap of between 10 and 12 inches is desirable. Owing to lack of standardization of spark gap terminals, exact comparison is not easy. A 16-inch gap may be even better, but this does not necessarily follow, any more than it follows that increasing frequency of sound vibrations will indefinitely cause greater shrillness of note; a point comes when the effect on the ear begins to diminish. It may even be, as Knox has suggested, that each particular tumour has its own "note."

Then, as to dosage, we are all agreed that *x* rays must not be administered consecutively for long periods. When two or three large doses are given, the total period occupied may be nearly as long as when twelve or fifteen smaller doses are administered. The difference is thus narrowed down until it is, in practice, chiefly a question as to how to divide up a certain total of *x*-ray energy. About two years ago Professor Russ recorded a case of multiple carcinomata of the skin in which some of the nodules were subjected to single large doses; others to the same dose in fractions spread over several days. In each case the nodules disappeared, but in the former case with much, at any rate temporary, injury to the skin; in the latter with no such disturbance. Now, on the face of it, the divided dose seems the better here, but only a study of results over many years can in reality settle such a question. If, however, in the above instance, one had decided to cut out the nodules surgically, I think there can be no doubt as to the advantage of the divided dose for pre- and post-operative treatment.

One has to remember that when a patient is operated on for cancer he has a surgical risk to face; and he *may* be cured whether any *x*-ray treatment is given or not. The big dose method is admittedly dangerous. If it is used as an alternative to surgery its risks may legitimately be faced; but why should we submit to fresh dangers a patient who has successfully come through an operation? Only the most positive proof that the divided dose is useless as well as harmless could lead us to abandon it, whereas a vast body of clinical and experimental evidence points to its value.

With theoretical considerations we need not concern ourselves overmuch. The advocates of the divided dose have never denied the value of *x* rays as destructive agents in localized cancer masses; but they claim that, even locally, the response of surrounding healthy tissues has as much to do with a good result as direct depression of malignant cells. That an excessive local dose may render the patient an easy victim to distant metastasis is now only too certain, but this danger has been recognized only comparatively recently, together with the fact that, by suitable dosage, the body resistance may be improved. The interaction of constitutional and local factors is so complex that it is doubtful if any conceivable technique can secure, coincidently, the maximum help from each. In practice we shall obviously stress the one or the other, according as we have our attention specially directed to the main growth or to possible metastases.

Mr. Cecil Rowntree's reference to *x*-ray cancer in man needs a word of comment. Such cancer was produced by years of daily exposure to unfiltered rays, generally very soft. This is a very different matter from the use of hard filtered rays in courses which never extend over two months at a time, and are not repeated until an interval of three to six months has elapsed.

Mr. Childe is against delaying operation for a single day; but this is surely an *ipse dixit* on his part—a thing which he deprecates in the radiologist. Whatever differences as to details may split the *x*-ray camp, he will find it now universally agreed that pre-operative radiation is desirable. The reason is obvious. The surgeon cannot guarantee that no cancer cells will be disseminated by the knife. If, therefore, any method is known by which either the cells of the primary mass can be made less active, or the tissues as a whole more resistant, or (better still) both of these desirable ends be accomplished, surely it should be used.—I am, etc.,

London, W., March 18th. F. HERNAMAN-JOHNSON.

TUBERCULOSIS MORTALITY.

SIR,—We are still very much in the dark about the relation of health and disease to wages and prices; but all who value impartial inquiry, honest interpretation, and clear statement are in the debt of the author of the chart published by the *Times* on January 1st, 1921. Thanks to him, the main outline of the facts can be bought for a few pence. The information given in the chart that is relative to the problem set by variations in the rate of mortality from tuberculosis may be summarized thus:

1. From about 1857 to 1900 real wages in this country nearly exactly doubled. Total incomes from profit of various kinds increased during that period nearly as far and as fast. The rise in wages was due in part to nominal additions to their rate, but a nearly steady fall in prices kept raising real wages faster than nominal wages. That fall in prices stopped in 1895, but rises in nominal wages rather more than kept step with the rise in prices from 1895 to 1900. During that period (1857–1895) mortality from tuberculosis diminished, as we all know, steadily and rapidly.

2. From 1900 to 1914 nominal wages kept rising, but prices rose faster. Real wages accordingly fell and were, by 1914, about 10 per cent. under 1900. As we all know, the mortality from tuberculosis diminished more slowly during that period than while real wages were rising.

3. During the first three years of war prices rose far faster than wages, so that in 1917 the average wage-earner was no better off than in 1870. During that period the mortality from tuberculosis at first tended to rise, and then actually rose.

4. From 1917 to 1920 nominal wages rose faster than prices until, in mid-1920, real wages had risen nearly to the level of 1900. They were then, in fact, exactly as high, when measured in terms of commodities, as they had been in the years 1896–7–8. And, as we know, tuberculosis mortality is falling once more.

These facts come from an impartial source and are no doubt accurate. But we sorely need a fuller and more detailed statement. Will not Dr. Brownlee give us data, published in the JOURNAL, to show us what relation, if any, exists between consumption of food and consumption of alcohol in the country and mortality from tuberculosis? Is it possible to work out the average consumption of fats during the critical years?

Such data would be of the greatest value in other connexions. If, as the figures quoted above suggest, the wage earners as a class have been worse off during the past ten years than a generation ago, it is surely both unjust and unwise to encourage them to contribute largely to hospitals. During the period 1900–20 incomes from profits rose steadily irrespective of movements of prices. Profits and wages, which kept step while prices were falling, parted company so soon as prices began to rise. Both doubled in the earlier period. Profits alone increased in the later period. Surely it is to their owners rather than to wage earners that those who support the voluntary principle for the upkeep of hospitals should look for what larger expenditure the rise in prices has rendered necessary.—I am, etc.,

Brailsford, near Derby, March 21st. NORMAN LEYS.

IRRITABLE BLADDER.

SIR,—I have read with interest Dr. Hamilton's letter in your issue of March 26th on this subject. Such cases very frequently present themselves for treatment in Bath, and are cleared up by a course of drinking the mineral water.

If he will have a quantitative analysis made he will find that in all cases there is an abnormal amount of uric acid in the urine, and that frequently the specific gravity is low. I have come to regard such cases as due to the irritation caused by the excess of uric acid in crystalline form.

Speaking from twenty years' specializing in spa practice in Bath, I agree with him that both sexes suffer equally. I find in the urine of such patients anywhere from 0.5 to 1 grain per ounce of uric acid, and when cure has resulted the uric acid and the specific gravity have gone back to the normal. Sharp attacks of haemorrhage have also not infrequently been reported in the histories.—I am, etc.,

Bath, March 27th. CHAS. BEGG, M.B., C.M.Edin.

ASTHMA AND ANAPHYLAXIS.

SIR,—Mr. Frank Coke's important and interesting paper on asthma and anaphylaxis suggests new lines of thought in this direction.

For some years the relationship of asthma to tuberculosis has interested me, and I had concluded on clinical grounds that tuberculosis may be in some cases the cause and in others the effect of asthma. In other words, asthma may predispose to tuberculosis by causing a local lowering of resistance; or, on the other hand, the onset of pulmonary tuberculosis may give rise to asthma in patients with an asthmatic diathesis.

This might account for some of the 50 per cent. of cases which he finds do not react to other proteins. Conceivably the exciting agent in the tubercle bacillus may be some portion of it other than tuberculin. No doubt Mr. Coke could devise a means of testing this.—I am, etc.,

Paignton, Devon, March 23rd. E. WARD.

SIR,—In the interesting account given by Mr. Frank Coke, F.R.C.S., in the BRITISH MEDICAL JOURNAL of March 12th, a very vivid and striking picture is given of anaphylaxis.

I have used serums in the same persons in such a way that I think anaphylaxis might have occurred, and yet nothing but good has happened. And I venture to ask if anaphylaxis has ever been known to occur when serums are given by the mouth.

All the records of anaphylaxis seem to have followed the injection of serums; and if it could be proved experimentally that serum when given by the mouth implies immunity from the tragic syndrome of anaphylaxis, it would be a boon of the highest order.

Personally, I have never injected a case of diphtheria, but always for thirty years have given the antidote by the mouth, and its strikingly beneficial results, without any of the drawbacks of injection, have been very gratifying. From 2,000 to 6,000 units can easily be given in a little chloroform water. And if this method confers immunity from anaphylaxis, it should, I think, be universally adopted in preference to injection.—I am, etc.,

Newcastle-upon-Tyne, March 20th. T. M. ALLISON, M.D.

SAPRAEMIC GLYCOSURIA.

SIR,—It has been known for many years that reducing substances are apt to appear in the urine in toxic conditions and various infectious diseases. As far back as 1878 Prevost, in a treatise on intermittent glycosuria, laid particular stress on its association with suppuration, and subsequently Redard and others have emphasized the connexion. In none of the cases so far published, however, has the exact nature of the reducing substance been established, and unfortunately this point has also been overlooked by recent contributors to your columns.

My own experience has been that glycuronic acid, pseudo-laevulose, and more rarely true laevulose and pentose, either alone or with dextrose, occur more commonly in toxic conditions than pure dextrosuria. When the latter has been met with, examinations of the blood after a test meal have shown that the patient's carbohydrate tolerance was lowered, and that, although some improvement might take place under treatment, complete recovery did not occur. It seems probable, therefore, that there are two conditions, one a "pseudo-glycosuria," from which the patient completely recovers; and the other a true, or mixed, glycosuria, which improves when the source of the toxaemia is removed, but leaves the patient at least a potential diabetic.

Whether the lowered carbohydrate tolerance in the latter is antecedent to, and a predisposing cause of, the infection, or is entirely an after-effect, is a matter of opinion, but personally I am inclined to think it is the primary condition in all cases where dextrose is excreted. My chief reason for saying so is that I have never yet met with a case of furunculosis where the blood sugar was not abnormally high, in spite of the fact that in some there was no sugar in the urine and glycosuria never developed. A short time ago, for example, I saw a patient in consultation who had a large boil on his back and had been operated on for another on the buttock a few weeks previously. Although his urine gave no reaction for sugar, examination of his blood showed 0.24 per cent. three hours after a test meal, compared with 0.16 per cent. to 0.17 per cent. in a normal person.

With regard to the disappearance of sugar from the urine after the removal of a septic focus, it must be borne in mind that, just as a high blood sugar does not necessarily result in glycosuria, so the disappearance of sugar from the urine may be due to other causes than improved carbohydrate metabolism. The pseudo-glycosurias are no doubt part of a protective mechanism, and probably arise from defects in the functions of the liver consequent on the toxaemia, so that one would expect them to clear up when the source of the toxin is removed. A true dextrosuria is a different matter, and although some improvement in tolerance may take place so that sugar is only present in the urine intermittently, and when carefully looked for by delicate tests, complete cure does not occur, and examination of the blood will often show a high sugar content.

This week I have seen a patient whose urine was examined in the first instance owing to repeated attacks of boils; it was then found to contain a large amount of sugar. Under treatment the sugar disappeared, and when I saw him he was stated to be sugar-free. Examination of his blood showed 0.30 per cent. of sugar, however, and he had another boil forming on the back of his neck.—I am, etc.,

London, W., March 26th. P. J. CAMMIDGE.

THE DENTISTS BILL.

SIR,—Mr. Campbell's letter, published in your issue of March 12th, p. 408, is so entirely inaccurate and misleading that it must not be allowed to pass unchallenged. Mr. Campbell states that the Dentists Act of 1878 prohibited unqualified dental practice, and that the Dentists Bill of 1920 does not. Exactly the opposite is the case.

The 1878 Act prohibited title only, and it was precisely because this course completely failed to safeguard the public that the 1920 bill was introduced, containing, as its essential feature, the strictest prohibition of unregistered practice in all its forms. As a corollary to this, in consideration of the vested interest of the present unregistered practitioners, it proposes to admit to the *Register*, under the control of the General Medical Council, all those who have been in bona fide practice for five years and are of good character. To this the British Dental Association, and the dental profession generally, strongly object, and they will use every endeavour to obtain a provision whereby the great majority of such practitioners shall not be placed on the *Register*, but upon a roll, under the control of the General Medical Council, entitling them to continue in practice, with the privilege of full registration on passing an examination of a practical character within a specified time.

Again, Mr. Campbell says, "A very glaring omission from the bill is a clause constituting a tribunal to investigate all claims for admission to the *Register*." But, Sir, Clause 2 is wholly concerned with the constitution of a board for this very purpose, and generally for the regulation of the dental profession, a board under the General Medical Council consisting of representatives of the Privy Council, the General Medical Council, the Ministry of Health, and the dental profession in Great Britain and Ireland. Surely he cannot have read the bill he is criticizing so severely!

The retention of company practice may be regretted, though it is really of little importance, as the main object of dental company practice—namely, the evasion of the law—is defeated by the provision that all the directors, managers, and operating staff must be registered dentists, and, as such, amenable individually to the jurisdiction of the General Medical Council, an exception being made in the case of directors and managers, not operators, who have acted in this capacity for a period of five years before the passing of the Act. Having no longer a reason for existence, dental companies will probably soon die out. The bill, on the whole, is a good bill. With the modifications suggested above and some others of a minor nature, it will have the support of the General Medical Council and the British Dental Association, and, if it becomes law, will be of the greatest benefit to the health of the nation and the advancement of dentistry.—I am, etc.,

London, W., March 18th. J. H. BADCOCK.

COMMITTEE FOR THE PREVENTION OF TROPICAL DISEASES.

SIR,—In your issue of March 12th you report, under the heading, "The Future of Research in Tropical Medicine," Sir Leonard Rogers's presidential address delivered before the Section of Tropical Diseases and Parasitology of the Royal Society of Medicine on February 24th last. In this report he is quoted as saying:

> "A few months ago I received an invitation to join an influential Committee for the Prevention of Tropical Diseases, but on learning from their circular that they proposed to spend £30,000 on a single expedition to a very small and rather healthy (because malaria-free) West Indian island, I felt obliged to decline the invitation, as I could not agree with such a policy. . . ."

Now, there is nothing in the circular in question which would lead anyone who reads it with ordinary attention to suppose that the policy of the committee is as stated by Sir Leonard Rogers, and it is not now, nor has it ever been, the policy of the committee to spend £30,000 "on a single expedition to a small and rather healthy . . . West Indian island." On the contrary, to quote the words of the circular, "the committee . . . proposes to begin operations by carrying out a thorough medical survey of the Lesser Antilles," and "it is expected that the survey of this group of islands will take about three years . . ."

Sir Leonard Rogers has not only misstated the objects and policy of the committee, but, not having attended any of the committee's meetings—at which his presence would have been most welcome—he has not, in fact, any accurate knowledge of what is in the minds of the members of the committee on this subject, and he has publicly criticized and stated his objection to a policy which has never been in contemplation by those concerned.

In the course of his speech Sir Leonard Rogers went on to refer to the benefits to be derived by the establishment of laboratories in various British tropical possessions, and many discussions have taken place as to what may ultimately be done in this respect. With this we are *ad idem* with him, but it is the view of the committee that (except as regards the travelling laboratories which necessarily accompany every expedition) the expedition should precede the permanent laboratory, and that this opinion has been justified in the past—as for example by the remarkable successes of the expeditions which have investigated malaria, plague, sleeping sickness, and other tropical diseases. The knowledge gained by these expeditions has been worked out at a later stage in permanent laboratories, which are in themselves, when suitably located, necessary, if expensive, institutions. That this policy has found favour in other quarters is evidenced by the previous missions (followed, it may be, by permanent laboratories) which have been sent out by the Rockefeller Foundation, as well as that now commissioned by the London School of Tropical Medicine, to carry out part of the identical West Indian scheme adumbrated by this committee and which Sir Leonard Rogers appears to condemn.

These pamphlets were sent to members of the medical profession and others likely to be interested. They were marked "Proof." It was evident, therefore, that they were not yet intended for public circulation, nor, one would have thought, were they fair matter for public criticism.—I am, etc.,

E. T. JENSEN,
Honorary Secretary, The Tropical Disease Prevention Committee.

London, W.1, March 23rd.

CONSULTANTS' LETTERS.

SIR,—It has unfortunately become the custom of certain medical practitioners, when one of their patients has visited a consultant, to give to the patient the letter received from the consultant respecting diagnosis, prognosis, and treatment. In recent years, when a patient has consulted me a second time, I have not infrequently been surprised by his presenting me with the letter I had written to his medical attendant after the first consultation. On inquiry, I have generally found, in such cases, that my letter had been given to the patient soon after the first consultation, and, of course, carefully read by him. No doubt patients often desire to read consultants' letters, but only a minority of practitioners would give such letters to the patients.

Whatever views may be held, it is clear that if this custom increases it will be desirable that consultants in their letters to practitioners should avoid giving their diagnosis in the case of certain diseases, and avoid expressing any prognosis unless favourable. In writing such letters I try to bear in mind that the letter may possibly be read by the patient, and therefore omit much I should otherwise have said. I think it is desirable that attention should be drawn to this subject, as in the past most consultants have been in the habit of freely expressing their opinion as to diagnosis and prognosis in their letters to practitioners, and have not expected that such letters would be given to the patients.—I am, etc.,

March 18th. PHYSICIAN.

THE LATE DR. NEWTON OF STOKE-ON-TRENT.

SIR,—Dr. Francis Morley Newton, medical officer of the Stoke-on-Trent Union Hospital, died on February 15th, 1920, leaving a widow and four children (aged, 8, 7, 6, and 1½ years). Dr. Newton was educated at Epsom and St. Bartholomew's. He suffered from asthma and diabetes and was unable to insure his life or to make provision in any other way for his family, so that their present financial position and future prospects are precarious.

A fund in aid of the widow and children has been opened under a committee having for chairman Mr. R. H. Dickson, F.R.C.S.I., Newcastle-under-Lyme (Chairman of the North Staffordshire Division of the British Medical Association, and President of the North Staffordshire Medical Society), and Mr. W. Webster, Newcastle-under-Lyme, as Secretary. The committee feels that friends or fellow-students of the late Dr. Newton might wish to contribute to the fund, and

takes the opportunity of the publicity offered by your columns to reach them. Contributions will be gratefully received and acknowledged by the Chairman or Secretary.—I am, etc.,

WM. WEBSTER,
Secretary to the Fund.

64, King Street, Newcastle, Staffordshire, March 28th.

Obituary.

LAWRENCE DREW SHAW, D.S.O., M.B., CH.B.GLAS.,

Pathologist to the London Lock Hospital.

WE regret to record the sudden death, in London on March 17th, of Dr. Lawrence Drew Shaw, D.S.O., late temporary Lieutenant-Colonel R.A.M.C., who served with great distinction in the war. He was born in 1881 and passed from the Dollar Academy to the University of Glasgow, where he graduated M.B. and Ch.B. in 1904. As a medical student he served in the South African war of 1899–1902, receiving the Queen's Medal. After qualifying he went to the Far East and settled in practice at Tientsin. On the outbreak of hostilities in 1914 he served against the Germans in North China, taking part in the siege and capture of the German fortress of Kiauchau. He then returned to Europe and took a temporary commission as lieutenant in the R.A.M.C. on March 15th, 1915, becoming captain a year later. After serving in Gallipoli he went to France in 1916, and was promoted acting lieutenant-colonel on January 29th, 1917. Colonel Shaw was awarded the D.S.O. on June 4th of that year, and fourteen months later he received a bar to the D.S.O. The official record of the second award ran as follows:

"He was placed in charge of the forward division of the combined field ambulances. Although constantly exposed to heavy shell and machine-gun fire, he organized the system of evacuation and extended it to neighbouring divisional units. By his inspiring example and disregard of danger he ensured a complete and successful evacuation of the wounded."

In June, 1919, he received the French Croix de Guerre. After demobilization he came to London and had done good work as pathologist to the London Lock Hospital.

A colleague who served with him in a field ambulance on the Somme in 1916 writes: "Lawrence Drew Shaw was an exceedingly brave man of outstanding character and ability. The war gave him the opportunity to show his mettle, and he seized it with both hands. Fearless and high-spirited, of magnificent build and physique and abounding energy, he was a born leader of men. Those who made his acquaintance early in the war knew that if his life were spared he would win high honours for courage and leadership in the field. When things were going wrong Shaw's commanding presence would steady the position. He delighted in action, and inspired others to do better than their best. He had a sound working knowledge of his profession, which he put to good use amidst the difficulties and makeshifts of practice on active service. What particularly struck many of us was his instant grasp of the medical needs of a military situation. Just as in danger he cheered up his colleagues and his men, so in dull times he was the best of companions. The epithet 'lion-hearted' seemed to fit Lawrence Drew Shaw better than any man I ever knew."

DR. THOMAS FORT, who died at Oldham on March 13th in his 68th year, received his medical education at St. Thomas's Hospital and took the diplomas of L.R.C.P. and L.M.Edin. and M.R.C.S.Eng. in 1877. He was a native of Preston and went to Oldham as a young man, where he built up a large practice and became very popular among a large circle of friends. He held the posts of certifying factory surgeon and police surgeon for about forty years, and about fifteen years ago was appointed surgeon to the post office. For many years he was associated with the volunteer movement, receiving the Volunteer Decoration for twenty-three years' service before the formation of the Territorial Force. He retired on account of advancing years shortly before the outbreak of the recent war, with the rank of honorary surgeon-colonel. He was a member of the Oldham Division of the British Medical Association, and is survived by his widow, a daughter, and two sons, both of whom are members of the medical profession.

DR. JOHN DROUGHT KENNY, whose death occurred on March 9th at his residence, The Grange, Wickersley, near Rotherham, was a native of Ireland, and obtained his medical education at Queen's College, Galway, and at the Ledwich School and Adelaide Hospital, Dublin. In 1884 he graduated M.D., M.Ch., R.U.I., and L.M. Rotunda, and in 1887 went to Yorkshire, where, after an assistantship, he settled down in practice in the village of Treeton, remaining there for the next twenty-five years. He built up a large and busy practice, and gained the esteem and affection of all classes by his cheery good-nature and unsparing devotion to his work. The poor and needy ever found him a ready and generous friend, and it will long live in the memory of the villagers how he helped them with money and provisions during a long and serious coal strike. His patients and friends showed their appreciation by presenting him with a handsome motor car when he left them, in 1912, to take up practice in Wickersley. He held numerous appointments under the Guardians, the Yorkshire Coalowners' Indemnity Company and various colliery companies, and he also took much interest in ambulance work. He was a staunch and sincere churchman and rendered many valuable services to the Church of England. His death, which occurred from pneumonia after a few days' illness, came as a great shock to his many friends. He is survived by his widow, with whom much sympathy has been expressed.

DR. HARRY HOLLIS died on March 12th, aged 54, at Redenhall, Norfolk, where he had gone on retiring from practice at Wellingborough last summer. He was born in Derbyshire, and studied medicine at St. George's Hospital and the University of Cambridge. He graduated B.A. in 1890, M.B., B.Ch. in 1893, and M.D. in 1898. After holding house appointments at St. George's Hospital and the Derbyshire Hospital, he became house-surgeon to the Northampton General Hospital, and ultimately removed to Wellingborough, where he joined Dr. Audland in partnership. Dr. Hollis had been a member of the old school board, a governor of Wellingborough School, and was one of the founders of the local Children's Welfare Centre. He was never very robust in health, and two years ago had an illness which led to his retirement. As a mark of esteem in which he was held, the townspeople of Wellingborough raised £200 as a testimonial to Dr. Hollis's work in the district. Whilst in active practice he was a member of the Northamptonshire Division of the British Medical Association. He is survived by his widow, two daughters, and a son.

THE death took place, at a nursing home in Edinburgh, on March 12th of Dr. ALEXANDER VEITCH, a well-known medical practitioner of Edinburgh. Educated at Edinburgh University, where he graduated M.B., C.M. in 1890, he subsequently acquired a large general practice in the city. Latterly he acted as a medical referee in workmen's compensation cases, and his pronouncements in these made him widely known. Dr. Veitch had more than the usual general practitioner's skill in surgical operative work, and he had also an extensive panel practice, being one of the first practitioners to take service under the Insurance Act. Of a kindly and philanthropic disposition, a lover of nature and a student of literature, he was widely esteemed. He took a keen interest in motoring in the early days of the industry, and was one of the first to make use of a motor car in his professional work.

THE death is announced of Mr. DAVID MORGAN BEDDOE of Cairo. He was born in December, 1869, and received his medical education at Guy's Hospital. He took the diplomas of M.R.C.S., L.R.C.P.Lond. in 1893, and that of F.R.C.S.Eng. two years later. After serving as house-surgeon at Guy's Hospital and at the Newport Infirmary he went to Egypt for the benefit of his health and soon established a successful practice in Cairo, where he became surgeon to the Anglo-American Hospital. Mr. Beddoe's literary tastes were well known; he was the author of several works of fiction, and of *A War Surgeon at the Red Cross Hospital, Cairo*, describing some of his experiences during the war.

THE LATE DR. W. IRONSIDE BRUCE.

AN old friend and colleague sends an appreciation of Dr. Ironside Bruce, of whom an obituary notice appeared in our last issue: When many years ago the writer first met Ironside Bruce it was as his chief clinical assistant at Charing Cross Hospital. At that time the picture was that of a young man remarkable for his quickness of action and manner, with rapid and incisive speech, and with just a piquant flavour of Scotland on his tongue. Endowed with marvellous energy, he was wonderfully patient with others and kind and considerate to his subordinates. To his clinical assistants Bruce was invariably helpful, always at their back, yet urging them on to work out things for themselves, and this, not from any inclination to shirk work, but because he appreciated the fact that the only way to teach people was to let them find their own legs. The wealth of Bruce's knowledge in his own sphere of work was shown in the excellence of his lectures and demonstrations to men who were working for the diploma in medical radiology of Cambridge University. On the subject of the necessity for comprehensive teaching of the radiologists of the future, there was no greater enthusiast than Bruce; only a week ago the writer received a message from him that he hoped he might be able to give some lectures in the ensuing term. How far the strenuous work done by Ironside Bruce during the war helped to lower his vitality the writer can only surmise; he does, however, know that from the enormous *x*-ray department of the King George (Military) Hospital, with but short and infrequent rests, Bruce was never absent on one of his appointed days. To the writer Bruce has never appeared to have been quite the same man since that time of terrible stress. Ironside Bruce was a clever man, a man of shrewd judgement, and withal a man of the most winning personality. Had he been spared there is no knowing what valuable records he might have left behind him. The stress of busy practice left him no time to give to the world what he could have given, and what, as he told the writer, he hoped to give. That he died a martyr to the science he loved is a truism; that a life so full of great possibilities should have been sacrificed is nothing short of a calamity. It is for us to do what we can to lessen, if possible, this sacrifice of life among *x*-ray workers.

The following message from His Majesty has been received by the Earl of Lonsdale, Treasurer of Charing Cross Hospital: "The King has learnt with much regret of the tragic death of Dr. Ironside Bruce, radiologist to the Charing Cross Hospital, and I am commanded to convey to you and the hospital staff His Majesty's sincere sympathy in the loss of so brilliant a physician, who sacrificed his life in the cause of science and humanity."

The post-graduates attending the courses in radiology for the Cambridge diploma at the Fellowship of Medicine and Post-Graduate Medical Association adopted, on March 23rd, a resolution expressing their sympathy with the widow, and putting on record their admiration of Dr. Ironside Bruce, "whose genial good-nature, ability as a teacher, and self-sacrificing devotion to his work endeared him to all with whom he came in contact."

THE death is announced of Mr. C. A. NANJAPA, I.M.S. Colonel J. Smyth, I.M.S., retired, formerly senior surgeon and sanitary commissioner, Mysore, writes:

C. A. Nanjapa, I.M.S., M.R.C.S., L.R.C.P., senior surgeon to the government of His Highness the Maharaja of Mysore, passed away on February 19th, 1921. He had just been promoted to the highest position in His Highness's medical service, yet a young man full of zeal and energy and high determination in regard to the duties that now devolved upon him. He spent a week with us here last year. He was obviously then much out of health, and was full of appreciation of the kindness of the profession in London to him in connexion with his disability. The loss of his only son and child on the way to England was a severe blow to both parents. And now the end has come. Of a very bright optimistic disposition, yet never anxious to appear much in public, he seldom published his work. It sufficed for him that he did his work conscientiously and well. In the hospital his cheery hearty manner contributed much to the contentment and comfort of the patients. He did not grow rich; to have a competence sufficed him. A gentleman in all respects, he left good impressions wherever he went. Educated in Madras, London and New York, and specializing in electro-therapeutics, his knowledge of men was as wide as his knowledge of medicine. He was absolutely free from suspicion or mistrust in Englishmen. He gave us credit for entire sincerity and a desire to be true to our salt. He was therefore a personal friend of many Englishmen, whose hearts were won by the straightforward manly spirit he always evinced.

Universities and Colleges.

UNIVERSITY OF CAMBRIDGE.

Diploma of Psychological Medicine.

A FIVE weeks' revision course for the Diploma examination will be held in Cambridge from July 18th to August 20th. The course will include lectures and laboratory work on the Anatomy and Physiology of the Central Nervous System (Dr. Thacker) and on Psychology (Dr. Lowson) for Part I of the examination, and lectures and clinical work on Psychopathology (Dr. Myers and Dr. Prideaux) and on Mental Diseases (Dr. Archdale) for Part II.

The fee for the whole course is 12 guineas. That for the course for Part I or Part II alone is 6 guineas. The examination for Part I (Anatomy and Physiology of the Nervous System, and Psychology) is held in October and that for Part II (Neurology and Psychiatry) in December. Further information may be obtained from the Secretary to the D.P.M. Committee, Psychological Laboratory, Downing Street, Cambridge.

UNIVERSITY OF DURHAM.

THE following candidates have been approved at the examination indicated:

THIRD M.B., B.S. (*Materia Medica, Pharmacology and Pharmacy; Public Health; Medical Jurisprudence; Pathology and Elementary Bacteriology*).—J. N. Alexander, Florence Bentham, R. W. Locke, G. C. E. Reffell, C. A. Wilson, Eleanor H. Wylam, Ella L. Young.

UNIVERSITY OF LIVERPOOL.

THE following candidates have been approved at the examinations indicated:

M.D.—Amy Hodgson, N. W. Walmsley.

FINAL M.B., CH.B.—*Class II.* *J. G. L. Jones. *Part III.* Eileen Dowling, F. H. Edwards, S. Farris, W. S. Gilmour, H. T. Hughes, R. M. Jones, Florence M. Lamport, R. F. J. Martin, F. G. Pailthorpe, J. H. Pottinger, A. McK. Reid, J. C. Twomey. *Part II.* G. C. Bhatia, Eleanor E. Briant, †H. R. Chibber, C. Cookson. *Part I.* Ethel Ashton, H. R. Chibber, G. Clark, H. M. Cohen, R. W. Cowie, J. Elsohn, I. S. Fox, H. S. Gordon, R. C. Gubbins, W. D. Jeans, T. Knowles, Mary E. Nosworthy, G. Sanders, S. G. Sheir, Mary D. H. Sheridan, W. T. de V. Thomson, Mary G. T. Williams, D. A. Woodeson.

D.P.H.—A. J. Hawes, J. O. Murray, L. B. Stott.

D.T.M.—R. Nixon, A. S. Richmond, J. M. Skinner, R. B. Stewart, Marion Thomson.

D.M.R. AND E.—C. C. Anderson, J. H. Mather, R. E. Roberts, R. I. C. Rodgers.

* Honours in Obstetrics.

† Honours in Forensic Medicine and Toxicology.

UNIVERSITY OF MANCHESTER.

THE following candidates have been approved at the examinations indicated:

THIRD M.B. AND CH.B. (*General Pathology and Morbid Anatomy*).—Elsie C. Begg, L. Boyars, F. W. W. Fox, E. S. Frischmann, R. Handley, Mary Kent, C. B. Kirkbride, G. A. Lord, Greta Lowe, G. L. Meachim, A. A. Pomfret, Eleanor P. Smith, J. H. Struthers, C. B. V. Walker.

D.P.H.—Marion Draper, J. H. Sheldon.

UNIVERSITY OF EDINBURGH.

AT the graduation ceremonial held in the McEwan Hall on March 24th the degrees of M.B., Ch.B., were conferred *in absentia* upon Bernard Friedman.

UNIVERSITY OF ABERDEEN.

THE following have passed the final professional examination in medicine:

C. D. Allan, J. J. H. Anderson, N. C. Bodenstein, C. K. Chen, *J. Craig, Lilian F. Gall, R. K. Grant, G. W. Hay, *Eleanora M. P. Law, Margaret Lipp, *D. G. MacDonald, A. MacKay, Elsie Mackie, Katherine C. Van de Merwe, Mary G. Milne, Dorothy Mitchell, John I. Moir, Marion E. Mowat, J. M. H. Murray, *Janet C. Nicol, *Mary M. Pyper, A. E. Reid, E. N. D. Repper, *J. P. G. Rossouw, G. Saint, N. C. Simpson, G. V. G. Smith, I. R. Stark, *A. L. G. Thomson Butterworth, I. S. Thomson, A. B. Wood.

* With distinction.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.

An extraordinary Comitia of the Royal College of Physicians of London was held on Monday, March 21st, at 5 p.m., with the President, Sir Norman Moore, Bt., in the chair.

The annual address was delivered by the President, who referred eloquently to the seven Fellows who had died during the past year—Dr. M. Handfield Jones, Dr. Philip John Hensley, Dr. David Lloyd Roberts, Dr. William Murray, Sir Frederick Taylor, Dr. William Odling, and Sir Felix Semon.

The Comitia then proceeded to the election of the President, and Sir Norman Moore was re-elected.

Licence to practise was granted to Evelyn Francis Bebbington, of Liverpool University. The President then dissolved the Comitia.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

APPROACHING ELECTION OF COUNCIL.

FOUR vacancies on the Council of the Royal College of Surgeons will be filled on Thursday, July 7th. The outgoing members are Sir George Makins and Mr. Ernest Lane, who do not seek re-election, and Mr. Waring and Mr. Burghard, who are coming forward again.

The constitution of the Council at present is as follows:

President.—Sir Anthony Bowlby, K.C.B., K.C.M.G., K.C.V.O., C. (1) 1904, (2) 1912, (3) 1920. Pres. 1920.

Vice-Presidents.—Sir Charles A. Ballance, K.C.M.G., C.B., M.V.O., C. (1) 1910, (2) 1914. Sir John Bland-Sutton, C. (1) 1910, (2) 1918.

Other Members of Council.—Sir George H. Makins, G.C.M.G., C.B., C. (1) 1903, (2) 1911, Pres. 1917; Sir Charters J. Symonds, K.B.E., C.B., C. (1) 1907, (2) 1915; Mr. W. F. Haslam, C. (1) 1908, (2) 1916; Sir D'Arcy Power, K.B.E., C. (1) 1912, (2) 1920; Sir Berkeley G. A. Moynihan, K.C.M.G., C.B., C. (1) 1912 (substitute), (2) 1919; Mr. James Ernest Lane, C. 1913; Mr. H. J. Waring, C. 1913; Sir William Thorburn, K.B.E., C.B., C.M.G., C. 1914; Mr. W. McAdam Eccles, C. 1914; Sir Charles Ryall, C.B.E., C. (1) 1914 (substitute), (2) 1915; Mr. Walter G. Spencer, O.B.E., C. (1) 1915 (substitute), (2) 1918; Mr. F. F. Burghard, C.B., C. 1915 (as substitute till 1921); Sir Herbert F. Waterhouse, C. 1915; Mr. T. H. Openshaw, C.B., C.M.G., C. 1916; Mr. Raymond Johnson, O.B.E., C. 1915; Mr. V. Warren Low, C.B., C. (1) 1916 (substitute), (2) 1917; Mr. J. Sherren, C.B.E., C. 1917; Sir John Lynn-Thomas, K.B.E., C.B., C.M.G., C. 1918 (substitute till 1925); Mr. Ernest W. Hey Groves, C. 1918; Sir Cuthbert S. Wallace, K.C.M.G., C.B., C. 1919; Mr. F. J. Steward, C. 1920.

The medical schools, etc., are represented as follows:

London:	
St. Bartholomew's	4
Charing Cross	1
Guy's	2
King's College	1
London	2
Middlesex	1
St. Mary's	2
St. Thomas's	3
University College	1
Westminster	1
Special London Hospital	1
Total London	19
Provincial:	
Birmingham	1
Bristol	1
Cardiff	1
Leeds	1
Manchester	1
Total Provincial	5
Total Council	24

The Services.

ADDITIONAL PAY FOR OFFICERS ON COMMITTEES.

AN Army Order provides that a field officer on full pay who is appointed to serve on a committee, or to act as its secretary, in virtue of possessing special scientific knowledge not acquired as part of his normal military duties, will receive 15s. additional pay for each day on which such committee sits. A captain or subaltern serving in similar circumstances will have additional pay of 10s. a day.

R.N. MEDICAL CLUB DINNER.

THE annual dinner of the Royal Navy Medical Club will take place at the Hotel Cecil, London, on Thursday, April 14th, 1921, at 7.30 for 8 p.m. Members who wish to be present are asked to inform the Honorary Secretary, Royal Navy Medical Club, 1, Lake Buildings, St. James's Park, S.W.1, not later than seven clear days before that date.

HONOURS.

FOREIGN DECORATIONS.

THE following are among the decorations and medals awarded by the Allied Powers for distinguished services rendered during the war 1914–19:

By the King of the Belgians.

Ordre de Léopold — Officier: Lieut.-Colonel John Kyffin, T.D., R.A.M.C.(T.F.). *Ordre de la Couronne—Officier:* Temporary (honorary) Lieut.-Colonel Edward Stewart, R.A.M.C.; Colonel Sir John Hewat, Assistant Director of Medical Services, South African Defence Force.

By the President of the French Republic.

Médaille des Epidémies — en argent: Temporary Major (acting Lieut.-Colonel) George D. Gray, O.B.E., R.A.M.C.; *en bronze:* Temporary Captains Clement A. Hughes, Charles F. Strange, and Herbert Tomlin, R.A.M.C. *Palmes Académie — Officier:* Captain William Adams Smith, C.A.M.C.

By the King of Italy.

Order of the Crown of Italy — Officer: Brevet Lieut.-Colonel Frederick S. Brereton, C.B.E., R.A.M.C. *Chevalier:* Captain Hugh Richard Phillips (late Surgeon R.N., and Captain R.A.M.C.).

Medical News.

AT a representative council meeting of the National Council for Combating Venereal Diseases, held on March 23rd, at the Royal Society of Medicine, Lord Gorell, President of the Council, made a full statement as to the relations now subsisting between the National Council and the Society for the Prevention of Venereal Disease. A memorandum (summarized in our last issue at p. 476) defining the policy of the National Council, which had been submitted to and received the approval of the Minister of Health, was considered in view of the report of the Special Committee of the National Birth Rate Commission. After discussion and the moving of an amendment, which was rejected by 41 votes to 8, the memorandum was adopted. Reports were received of the valuable work carried out under the aegis of the Colonial Office by the three Commissions of the National Council which visited Shanghai, Hong Kong, Singapore, Ceylon, Malta, Gibraltar, Jamaica, Barbados, Grenada, Trinidad, Demerara, and Bermuda.

THE King, with the advice of his Privy Council, has nominated Sir Francis Champneys, Bt., M.D., to be, for a further term of five years from May 23rd, 1921, a member of the General Medical Council.

A COURSE of twelve practical demonstrations, on the management and feeding of infants and young children, for medical practitioners will be given at the St. Marylebone General Dispensary, Welbeck Street, W.1, by Dr. Eric Pritchard, on Tuesdays and Thursdays, at 10.30 a.m. and 3 p.m. respectively, commencing on April 5th. The fee for the course is two guineas, and opportunities will be afforded to students of visiting on Saturday afternoons the Nursery Training School, 1, Wellgarth Road, Golder's Green, and seeing there the methods employed in dealing with infants.

AT the annual meeting of the Society for the Study of Inebriety, to be held at the rooms of the Medical Society of London, 11, Chandos Street, W., on Tuesday, April 12th, at 4 p.m., Dr. H. H. Dale, F.R.S., will open a discussion on the use of alcohol in medicine.

A SPECIAL post-graduate course will be held at the North-East London Post-graduate College from Monday, April 25th, to Saturday, May 7th, inclusive. At 10.30 a.m. and at 11.45 a.m. each day practical demonstrations will be given on clinical and laboratory methods applicable in medical practice. At 2 p.m. demonstrations will be given on groups of cases illustrating special subjects, and at 3 p.m. on selected cases in various departments of practice. At 4.30 p.m. there will be either a clinical lecture (by Sir William Hale-White, Sir Thomas Oliver, Sir Henry Gauvain, Mr. H. D. Gillies, Dr. P. Manson-Bahr, Dr. Frederic Thomson, and others), or clinical consultations on obscure medical and surgical cases. On Saturdays demonstrations will be given on the early diagnosis of the infectious fevers at the North-Eastern Fever Hospital, St. Ann's Road, London, N., and on cases of insanity associated with epilepsy at the L.C.C. Mental Hospital, New Southgate, London, N. Luncheon will be obtainable in the neighbourhood and tea will be provided each day at 4 p.m. The fee for the course is 3 guineas or 2 guineas for either week. The lectures at 4.30 p.m. will be free to qualified medical practitioners. Further information may be obtained from the Dean of the College at the Prince of Wales's General Hospital, Tottenham, N.15.

WE are asked to state that the meeting of the Section of Psychiatry of the Royal Society of Medicine arranged for April 12th will not be held.

DR. ARTHUR ALFONSE MILLER has received the Cross of Chevalier of the Legion of Honour conferred upon him by the President of the French Republic in recognition of his services to the French sick and wounded in the late war.

DR. ROBERT SHAND TURNER, who is leaving Keith, where he has practised for over fifty years, to reside in Edinburgh, has been presented by his friends and patients with a cheque of £360, and Mrs. Turner with an inscribed silver casket, as a mark of their esteem and regard.

DR. T. HENRY JONES, on the occasion of his retirement from the office of County M.O.H. for Surrey, has been presented by the members of the County Council and committees thereof with two Persian rugs and an illuminated address, and Mrs. Jones with a silver kettle and hot-water jug, as a mark of esteem.

THE annual general meeting of the London and Counties Medical Protection Society will be held at the offices of the Society, 32, Craven Street, Strand, W.C.2, on Wednesday, April 6th, at 4 p.m.

DR. F. E. WYNNE, on the occasion of his relinquishing the medical officership of health for the county borough of Wigan to become medical officer of health for Sheffield, has been presented by the various staffs of the Wigan Health Department with a silver tea service as a mark of appreciation and esteem.

THE second annual reunion of the Workers for Serbia will take the form of a dinner and dance to be held at the Wharncliffe Rooms, Hotel Great Central, on Tuesday, April 19th, at 7 p.m. Colonel Sir Courtauld Thomson, K.B.E., Chief Commissioner of the British Red Cross for Malta and the Near East, 1915–1919, will be in the chair, and a large gathering of the medical men and women who served with the medical missions or with the R.A.M.C. units attached to the Royal Serbian Army is hoped for. Tickets, price one guinea each, may be obtained from the honorary secretary, Miss Marx, 24, Melcombe Court, Dorset Square, N.W.1.

Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL *must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.*

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.*

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London;* telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London;* telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Medisecra, Westrand, London;* telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin;* telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh;* telephone, 4361, Central).

QUERIES AND ANSWERS.

TRUSS FITTING.

DR. J. J. E. BIGGS, O.B.E. (Cardiff) writes: Can any of your readers give me any information as to how to get a patient measured for a truss? The patient is a female, aged, feeble and emaciated, with an old-standing spinal curvature; there is a femoral and an indirect inguinal hernia in the right side. Most of the instrument makers I have tried have attempted to make the patient fit their pre-conceived notion of a truss instead of trying to make the truss fit the patient. It is impossible for the patient to travel to London for fitting. Before the war one firm, I remember, supplied me with a soft metal piece of wire, marked in inches, which could be firmly and accurately modelled on the patient and removed without altering the contour.

*** (1) It is doubtful whether an aged, feeble, scoliotic patient with a hernia is a suitable case for any spring-truss. (2) When fitting at or by the maker is impossible, it is a good plan to make use of the soft metal graduated cyrtometer, listed in all surgical instrument catalogues. The cyrtometer can be folded and sent to the maker in a box, or its curvature, when fitted, can be traced on paper and so reach the truss-maker. (3) If the truss when received does not fit exactly, the medical man can generally do what the maker would do—bend the spring appropriately with his hands, perhaps with the aid of a vice or improvised equivalent. The resources of a "car" are nearly always adequate, for the "temper" of the spring is not as a rule very high. (4) When a spring-truss is unsuitable it is sometimes easy to attain the desired support by using a more or less triangular pad, held in place by webbing and elastic straps attached to the three corners, in the manner adopted by one of the well known patent "cures." (5) In the presence of emaciation it may be found most satisfactory to use a spica bandage of crêpe over an appropriate pad. (6) Makers certainly sometimes expect patients to be content with unsuccessful efforts, but when they do not see the patient they may fairly expect the doctor to do something towards fitting the truss after receipt.

INCOME TAX.

"S. H. S." inquires whether it is correct for the earnings of his partner and himself to be assessed in one sum, less the aggregate allowances for both.

*** The assessment must be made in one sum on the profits of a partnership practice, but the local inspector will usually supply on request such supplementary particulars as are necessary to enable the net duty payable to be correctly apportioned between the partners. The abolition of this inconvenient system of assessment was urged by the British Medical Association representative before the Royal Commission on Income Tax, and the suggestion was favourably received.

"M.D.EDIN." bought a car in 1910 for £250, and sold it for that sum in 1920, buying a new one for £600. He asks if he can deduct the £350 as an expense.

*** An official witness before the Royal Commission on Income Tax stated that, provided an improvement was not effected, the actual cost of the replacement of a machine would be allowed. Assuming that the new car is not of superior power or quality, "M.D.Edin." appears to be entitled to deduct the £350.

LETTERS, NOTES, ETC.

THE STETHOSCOPE IN FRANCE.

INASMUCH as the stethoscope is a French invention it is always something of a surprise to the British or American medical traveller in France to find that the binaural stethoscope is virtually unknown there, and the use of even the single wooden implement is restricted to investigation of difficult heart sounds. There are, of course, physicians in this country, especially of the older generation, who prefer to use the wooden stethoscope, particularly in the examination of the heart, but they are the exceptions. French doctors defend their neglect of the binaural stethoscope on the ground that the respiratory and other sounds are changed and distorted by passage through the tubing. To this it may be replied that, although the sounds are indeed modified, so is the voice of a friend heard through the telephone; yet this fact does not prevent our recognizing his voice, detecting his emotions, and understanding his speech. Moreover, no great amount of practice is needed to learn to distinguish extraneous or fortuitous sounds heard through the stethoscope. But the binaural instrument has certain positive advantages. Thus, it greatly facilitates examination, since one can "run over" the chest in a very short space of time; again, in hospital practice—particularly in French hospitals, where it is not the custom to give patients a bath on admission—the flexible pattern enables the physician or student to keep at arm's length from his patient, and his attention is less distracted by the noises around him. There are advantages, too, from the patient's point of view, for it is common experience in French hospitals to see a man seriously ill from typhoid fever or heart disease compelled to sit up in bed in order to permit of auscultation of the base of the lung, whereas when the binaural stethoscope is used it suffices to turn him on his side. Furthermore, the flexible stethoscope can be applied to the chest with a lighter touch than the rigid pattern. We have heard it said that our French colleagues' disregard for the binaural stethoscope must be due to a *mot d'ordre*; for it is to be observed in all hospitals controlled by French medical men, from Paris to Algiers, from Lille to Bordeaux, and even students cannot be induced to give the instrument a trial, so strong is the force of the example set by their chiefs.

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 33, 36, 37, 38, 39, and 40 of our advertisement columns, and advertisements as to partnerships, assistantships, and locum tenencies at pages 34 and 35.

THE appointments of certifying factory surgeons at Canterbury (Kent) and West Bromwich (Stafford) are vacant.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Six lines and under	0	9	0
Each additional line...	0	1	6
Whole single column (three columns to page)	7	10	0
Half single column	3	15	0
Half page	10	0	0
Whole page	20	0	0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Tuesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.